

HISTORIC STRUCTURE REPORT

ANDREW PETERSON FARMSTEAD, WACONIA, MINNESOTA

Prepared for the Carver County Historical Society
Submitted November 22, 2017

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INTRODUCTION

LOCATION

Andrew Peterson Farmstead
8060 Highway 5
Waconia, MN 55387

HISTORIC DESIGNATION

National Register of Historic Places

PURPOSE AND SCOPE

The Carver County Historical Society commissioned this study. The project has been financed in part with funds provided by the Jeffris Family Foundation, the National Trust for Historic Preservation, the Sando Foundation, and the Carver County Community Foundation.

The Carver County Historical Society has title to and operates the historic site, and plans to further the interpretation of the Andrew Peterson Farmstead.

The primary purposes of this Historic Structures Report are:

- First, to summarize the rich history of the Andrew Peterson Farmstead through the lens of Minnesota's rich immigrant and agricultural history.
- Second, to survey and evaluate the physical condition of the existing structures on the farmstead except the North Barn, which has recently been restored.
- Third, to recommend treatment strategies for each structure on the property that will aid in the long-term stewardship and interpretation of the site.
- Fourth, to create a prioritized list of work, and develop construction cost estimates for the work recommendations

within the report.

The report focuses on the seven structures currently on the property:

1) A smokehouse, built in 1901
2) The farmhouse, built between 1867 and 1881
3) A granary, built prior to 1868 with an 1880 addition
4) The South Barn, built in 1884
5) The North Barn, built in 1887 (restored in 2017)
6) The "Big" Barn, built in 1914 with an addition and silo circa 1950s
7) The garage, built in the 1970s

In order to properly recommend and describe treatment for the farmstead site as a whole and in order to support the interpretation of the existing structures, this report also discusses elements and structures from the period of significance of the site, Andrew Peterson's lifetime, that no longer exist. These site elements and buildings include those that are documented in his diaries and/or are documented in historic photographs from that time period.

METHODOLOGY

The significance of the Andrew Peterson Farmstead lies in the agricultural and horticultural development that the structures supported. Andrew Peterson documented his relationship with the land and establishment of the farmstead in diary entries.[1] The diary is the most comprehensive resource available for this farmstead, and this primary source makes the farmstead one of the most well-documented farmsteads in Minnesota representative of this era. Information from these diaries have been used in conjunction with physical evidence from the site, historic photographs, and historic research to date each structure and its parts, as well as create an overall statement of significance.

In addition, the 1978 National Register of Historic Places Nomination,[2] the book *Andrew Peterson and the Scandia Story*,[3] and the 2014 Thorbeck Master Plan Document[4] were reviewed during the course of this study. The researchers on this project also consulted with

1 Andrew Peterson and Family Papers: *The Diary of Andrew Peterson, 1885-1898.* Minnesota Historical Society. St. Paul, Minnesota.

2 Edward Lofstrom, "The Andrew Peterson Farm," National Register of Historic Places Inventory/Nomination Form, Heritage Committee Carver County Historical Society, Waconia, Minnesota, October 11, 1979.

3 Josephine Mihelich, *Andrew Peterson and the Scandia Story* (Minneapolis: Ford Johnson Graphics, 1984).

4 Dewey Thorbeck, "Historic Andrew Peterson Farmstead Concept Master Plan," prepared for the Carver County Historical Society, Waconia, Minnesota, 2014.

investigations in the summer of 2016.[5] The archaeology student also completed a Master's Thesis about the site in 2017.[6] Historic research was conducted at the Carver County Historical Society, the Minnesota Historical Society, and the Borchert Library at the University of Minnesota. Lena Ason-Palmqvist's work on the architecture of Swedish immigrants in Minnesota[7] was also referenced for this study.

Field survey investigations were conducted from January 2017 through July 2017 to inventory, record, and analyze the physical condition of architectural and structural features of the buildings on the Andrew Peterson Farmstead. Documentation of the site included photographs and measured drawings. Laser scans were also produced to document the buildings and landscape of the farmstead as it existed at the time of this study.

All investigations were non-invasive, with the exception of the removal of selective non-historic materials at the farm house. The report recommends some future invasive investigations.

Paint analysis was conducted as part of this report. Due to the presence of lead paint throughout the site, paint analysis was limited. Investigations focused on determining interior and exterior finishes for the farmhouse. A paint color was also determined for the exterior of the barns and the granary. Samples were taken from various places to determine the appropriate whitewash and paint colors. More information is available in Appendix C: *Historically Appropriate Coatings*.

All work and recommendations have been completed in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and relevant Preservation Briefs, chiefly *Preservation Brief 43: The Preparation and Use of Historic Structure Reports* (Slaton, 1997). Recommendations are the opinion of the authors of this report, based on information available at the time of the study. The authors recommend that the State Historic Preservation Office be directly involved with the design team and the owner during the planning phases for the future development on the site.

5 Resilient Communities Project, "Archaeological Investigations for the Historic Andrew Peterson Farmstead and Interpretive Center," University of Minnesota and Carver County, RCP Project # 2015-29b.

6 Joseph Klobuchar Pnewski, "Recycled Connections: Re-use and Related Landscapes of the Historic Peterson Farmstead 1855-Present Day," (Master's Thesis, University of Minnesota, 2017).

7 Lena Ason-Palmqvist, Building Traditions Among Swedish Settlers in Rural Minnesota (Uddevalla: The Nordiska Museet/ The Emigrant Institute, 1983).

PROJECT PARTICIPANTS

MacDonald and Mack Architects led the project. Angela Wolf Scott served as Principal Architect-in-Charge. Staff member Sarah Ward had a major role in on-site investigations, documentary research, building analysis, and report writing and production. Paint analysis was completed by Angela Wolf Scott and Sarah Ward. Amy Van Gessel and Madelyn Sundberg assisted with diagramming and report production.

The structural engineering portion of this study was conducted by Mattson Macdonald Young Structural Engineers led by Dave Macdonald.

The history and architectural history portion of this study was led by Rolf Anderson with assistance from Sue Granger.

ACKNOWLEDGMENTS

The authors thank Wendy Petersen Biorn and the Carver County Historical Society Board: Peter E. Gustafson, Darlene Fasching, Lin Deardorff, Matthew D. McDougall, Randy Maluchnik, Mike Coleman, Dan Lund, Mike Fahey, Burton Johnson, Maureen Farrell, Gerry Johnson, Mark Willems, and staff who were very generous with their time and knowledge and assisted in the Historic Structures Report project for the Andrew Peterson Farmstead. Thanks also to Royce Yeater from the Jeffris Foundation for his careful review of, and thoughful feedback for, this project and document.



EXECUTIVE SUMMARY

The Carver County Historical Society (CCHS) commissioned this study as a resource to assist with managing the changes required to transition this unoccupied site to the Historic Andrew Peterson Farmstead, a site open to the public and dedicated to the interpretation of the property "through the lens of Minnesota's rich immigrant and agricultural history."*

SUMMARY OF FUTURE USE

The focus of the interpretation of the Andrew Peterson Farmstead will be Peterson's history and legacy as an immigrant to Minnesota and as an agricultural and horticultural innovator. The farmstead will host visitors of all ages. In addition, the Carver County Historical Society wishes to locate some of their staff offices on the property.

The Carver County Historical Society also plans to work with the Three Rivers Park District on joint programming. The Andrew Peterson Farmstead has been identified as a future snowshoe and ski rental facility, as well as a trailhead for the Park District. There is also potential for collaboration with the Grimm and Gale Woods Farms for educational programs.

In order for the Carver County Historical Society to fulfill their goals for the use of the site, some facilities will need to be added for visitors and administrative personnel. The Carver County Historical Society wishes to either construct a new building or rehabilitate one of the existing buildings for use as an entry building, or interpretive center. They also wish to construct a picnic shelter for food service and large group assembly on the site. In addition, CCHS desires a space, which will not be open to the public, for administrative offices. A parking lot and toilet facilities are also necessary to support the uses of the site. Where public restrooms are located will be dependent on CCHS's final master plan for the site. If the 1914 barn is retained, than the toilet rooms could possibly be located in that structure. If a new structure is built for a vistor's center, than the toilet rooms could be located in that structure.



Figure 1: Andrew Peterson in his apple orchard, 1896, photo courtesy of the Minnesota Historical Society.

* Wendy Peterson Biorn, "Request for Proposal for Professional Services: The Historic Andrew Peterson Farmstead Historic Structure Report," April 15, 2016, 2.

HISTORIC PRESERVATION TREATMENT PHILOSOPHY

The combination of the resources, opportunities, demands, and standards outlined in this report led to the treatment philosophy below. These are listed in order of priority of work.

1. For existing buildings that are contributing resources to the historic district –
    a. The exteriors of these buildings will be restored to the period of significance.
    b. The interiors of these buildings will be either restored to the period of significance or rehabilitated with a sympathetic new use in a manner congruent with the Secretary of the Interior's Standards.
2. For existing buildings that are non-contributing resources to the historic district –
    a. The treatment for these buildings should be assessed on a case-by-case basis.
3. If insufficient evidence is available to determine if an existing resource is from the period of significance, then it should remain on-site until a reasonable determination of its construction date can be made.
4. For new construction of buildings and site amenities (such as parking lots and picnic facilities) –
    a. The siting of these buildings and features will not be within the primary farmyard area, preferably also outside of the viewshed from the farmyard.
    b. The design of these buildings and features will not portray a false sense of history and the scale of the buildings should be sympathetic to the historic buildings and patterns of development of the farmstead during the period of significance.
5. For buildings that have been identified as part of the farmstead during the period of significance but no longer exist –
    a. The exteriors of these buildings may be reconstructed if sufficient documentation can be identified.
    b. The interiors of these buildings will be either reconstructed (if sufficient evidence is available) or not open to the public.

ANDREW PETERSON FARMSTEAD TREATMENT SUMMARY

The following is an outline of the uses and treatments for the buildings and features in the proposed site plan for the Andrew Peterson Farmstead. As mentioned above, the recommended work to the site is based on the restoration of the site as a whole back to its appearance during the period of significance. This outline provides individual treatment strategies in order for each feature to function as part of the restored site. Please refer to the site diagram for approximate locations. It is recommended that further historical and archaeological investigations be done to determine accurate locations of building foundations. Please refer to the individual building sections for detailed recommendations and action steps.

1. Farmhouse, 1867-1881

The farmhouse is essential to the narrative of Andrew Peterson's life and it is recommended that the building be Rehabilitated. The exterior and first floor should be restored to its 1885 appearance as evidenced from photographic documentation, his diaries, and remaining physical evidence of how it looked during the period of significance. It is recommended that the upper floor of the house and building systems be rehabilitated to accomodate offices.

2. The Granary, pre-1868 with 1880 addition

The granary is existing, has been moved, and is in moderate condition. It is recommended that it be restored and moved back to its original location.

3. The South (cow) Barn, 1884

The South Barn is in poor, unstable condition, and requires significant work to stabalize or reuse. It is recommended that stabilization efforts commence immediately and are planned to accomodate CCHS's future uses for the building.

4. The North (hog) Barn, 1887

This barn has recently been Restored.

5. The Smokehouse, 1901

The smokehouse is in good condition and with a few modifications can be Restored to working condition.



Figure 2: Peterson family in front of Farmhouse (1), photograph taken May 8, 1885.



Figure 3: Farmhouse (1), camera facing northwest.



Figure 4: The east facade of the Granary (2).



Figure 5: Photograph of the South Barn (3), camera facing northeast.



Figure 6: North facade of North Barn (4).

6. The "Big" 1914 Barn, Silo (circa 1950s), and West Addition (circa 1958)

The 1914 Barn is in poor, unstable condition, and requires significant work to stabilize and reuse. It is recommended that the silo and west addition be removed. If CCHS opts to retain the 1914 portion of the barn, efforts to stabilize it should commence immediately and be planned to accomodate future uses. The timbers within the structure from 1874 should be measured and documented.

7. Garage, circa 1970s

The garage is a non-contributing structure, constructed after the period of significance. It is recommended that the garage be demolished. It is in poor condition.

NEXT STEPS

In order to accomplish some of the recommendations made in this report, more study must be completed:



Figure 7: West facade of the Smokehouse (5).

1. Archeological Investigation

While the recent Master's Thesis that focused on the Andrew Peterson Farmstead was helpful, it had a limited scope and limited resources. A critical part of caring for the farmstead is identifying, recognizing, and protecting the archaeological resources on the property. Therefore, the next step is determining what archeological resources exist. We recommend that a comprehensive site investigation and survey be completed by licensed professional archaeologists prior to the commencement of any site work. We recommend this investigation be guided by Andrew Peterson's diary as a primary resource, and that archaeologists be familiar with the complete built history of the farmstead prior to commencement of further on-site investigations and excavations. As discussed in the following sections of this report, archaeological investigations should be used to verify the locations of some of the features of the farmstead prior to their reconstruction. These investigations also have the potential to identify other historic features that no longer exist, such as the boundaries of fenced areas. Once an investigation is complete, an archaeological resources management plan should be made.

2. Cultural landscape report (CLR)

Likewise, a thorough understanding of the types of agricultural crops, vegetation, soils, topography, water features, and other landscape

features is paramount. We recommend that a Cultural Landscape Report (CLR) be completed by landscape architects who specialize in historic landscapes.

3. National Register of Historic Places Update

The National Register of Historic Places Nomination could be updated to better reflect the history and significance of the property. Nominations from the 1970s were typically brief and to the point. A revised nomination would include a complete description of all resources on the property, including small scale elements, and landscape features. While the original nomination cited Agriculture and Exploration/Settlement as the areas of significance, an updated nomination could likely expand the areas of significance to include Ethnic Heritage and possibly Social History.

Under the original nomination, the farm was considered significant under National Register Criterion A: properties that are associated with events that have made a significant contribution to the broad patterns of history. It is possible the property is also eligible under National Register Criterion B: properties that are associated with the lives of persons significant in our past. Peterson's work in horticulture alone might qualify the property under this category.

An updated nomination would provide a more complete depiction of the property and reflect its importance, but it should also bring attention to the remarkable Andrew Peterson story and his historic farmstead.

As the Carver County Historical Society works to restore buildings on the Peterson Farmstead, and takes further steps to increase the integrity of the property, it will be necessary for CCHS and their consultants to remain in contact with the State Historic Preservation Office about these efforts.

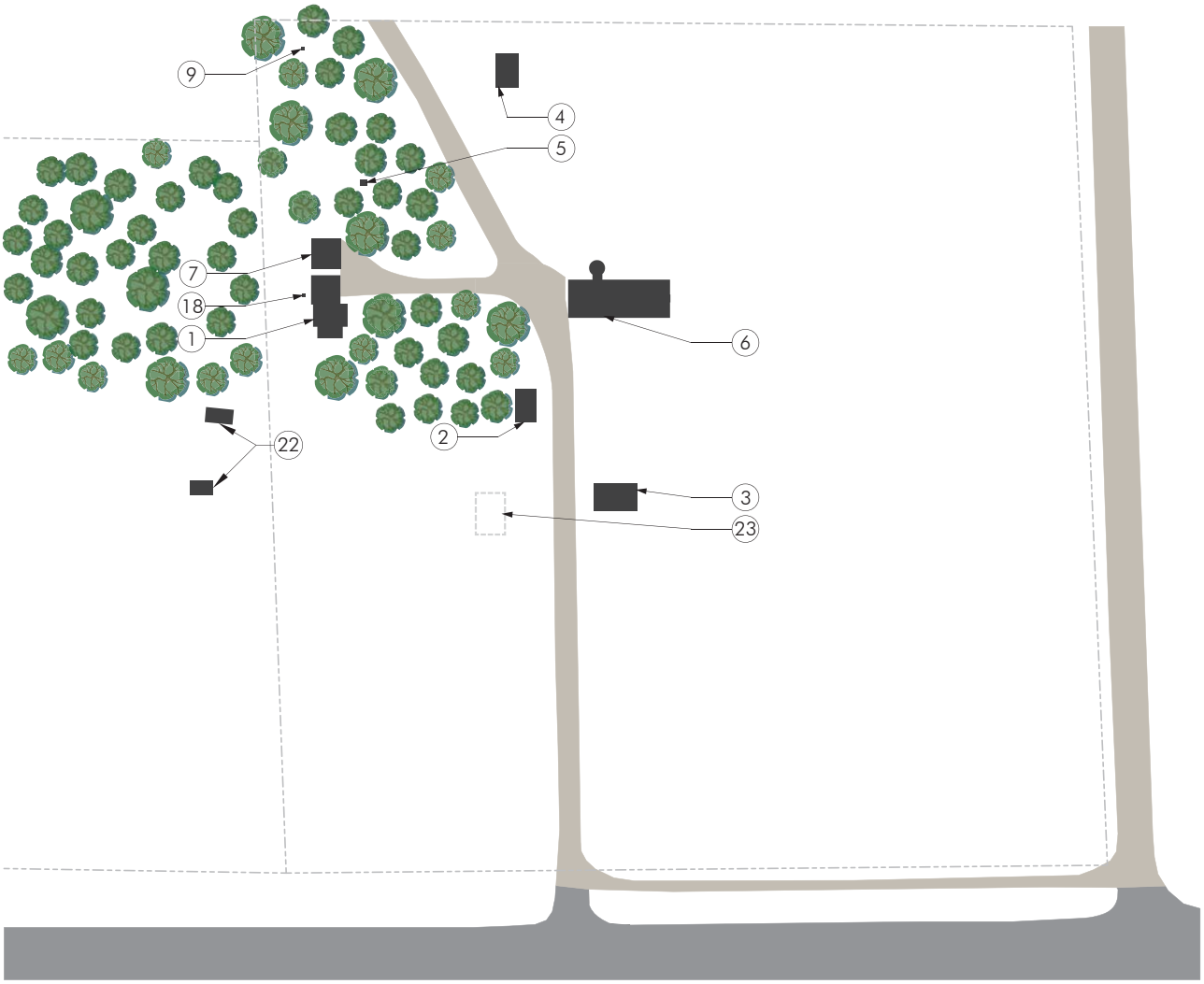


Figure 8: North facade of 1914 Big Barn and Silo (6).



Figure 9: East facade of Garage (7).

CURRENT SITE PLAN



Legend

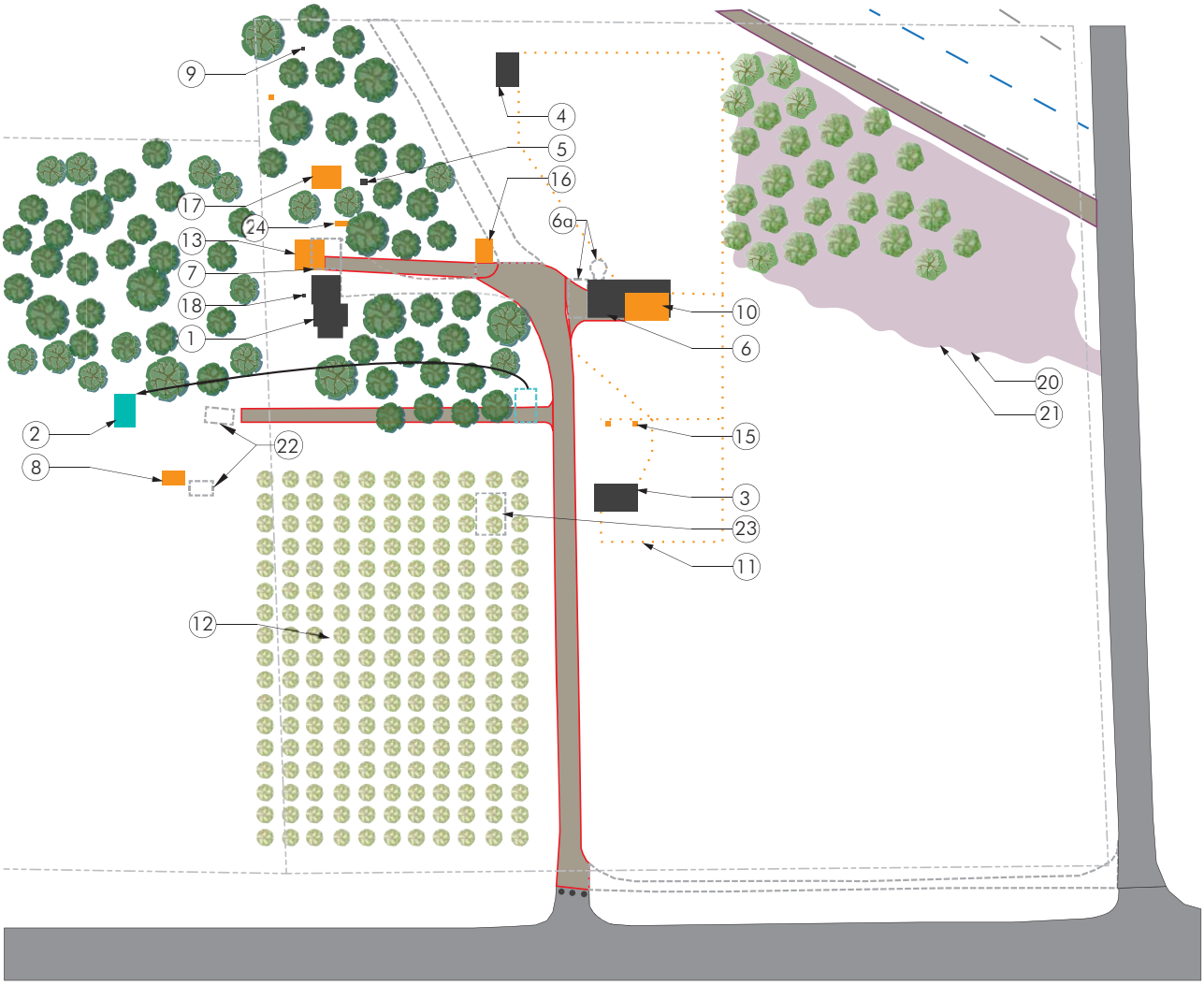
Buildings/ Features | Property Lines | Roads | Trees (approximate)

N

Notes

1 Farmhouse (restore to 1885)
2 Granary
3 South Barn (restore to 1885)
4 North Barn
5 Smokehouse
6 "Big" 1914 Barn
6 Silo and Addition
7 Garage
8 Early Residence
9 Boiling Pit
10 1874 Barn
11 Fences
12 Apple Orchard
13 Wagon Shed
14 House Privy
15 Barnyard Well & Well House (requires Archaeological study)
16 Workshop
17 Outbuilding
18 House Well
19 Barnyard Privy (requires Archaeological study)
20 Proposed Area for Parking Lot
21 Area for New Entry Building
22 Structures on adjacent property
23 House Foundation
24 Clothes Line

1885 RESTORATION SITE PLAN WITH CURRENT SITE PLAN OVERLAY



Legend

- Restoration or Rehabilitation
- No Longer Existing (location requires archaeological study)
- Relocation
- General area appropriate for New Construction
- Structure or Path Removal
- Property Lines
- Existing Roads
- New Driveway for Neighbor
- Non-Vehicular Path
- Centerline of oil pipeline
- Historic Apple Orchard Site (no longer existing, requires future landscape study)
- New Trees Proposed
- Existing Trees (approximate)
- Oil pipeline easement boundaries

N

Notes

1. Farmhouse (restore to 1885)
2. Granary
3. South Barn (restore to 1885)
4. North Barn
5. Smokehouse
6. "Big" 1917 Barn
6a. Silo and Addition
7. Garage
8. Early Residence
9. Boiling Pit
10. 1874 Barn
11. Fences
12. Apple Orchard
13. Wagon Shed
House Privy (requires Archaeological study)
15. Barnyard Well & Well House (requires Archaeological study)
16. Workshop
17. Outbuilding
18. House Well
Barnyard Privy (requires Archaeological study)
20. Proposed Area for Parking Lot
21. Area for New Entry Building
22. Structures on adjacent property
23. House Foundation
24. Clothes Line



DEVELOPMENTAL HISTORY

PREPARED BY Rolf Anderson

HISTORY OF THE ANDREW PETERSON FARMSTEAD

The Andrew Peterson Farmstead is located in Laketown Township, Carver County, along Minnesota State Highway 5 at the intersection with Parley Lake Road. The property is two miles east of Waconia, and approximately 30 miles southwest of downtown Minneapolis. Carver County was first settled in the 19th century as a farming region, which was accessible from St. Paul by steamboat via the Minnesota River. Today, while suburban development is evident in portions of Carver County from the expanding metropolitan area, the lands surrounding the Peterson Farmstead still retain their rural, agricultural character with cultivated fields and working farms located nearby.

The farmstead was listed on the National Register of Historic Places (NRHP) on October 11, 1979. Five contributing buildings were identified in the nomination: the farm house, granary, north and south barns, and smokehouse. The period of significance was within the date range of 1800-1899. The areas of significance noted in the nomination were agriculture and exploration/settlement.[8] Moreover, the property derives its significance from its association with Andrew Peterson and the diary he maintained with daily entries from 1855 until his death in 1898. The 43-year diary provides remarkable insight into the life of a Swedish-immigrant farmer in 19th century Minnesota and offers a rare opportunity to interpret the Peterson Farmstead with an exceptional level of historic authenticity.

8 Edward Lofstrom, "The Andrew Peterson Farm," National Register of Historic Places Registration Form, St. Paul: Minnesota Historical Society, January 1978.

Peterson's important experiments in horticulture brought him fame during his lifetime. But it was his diary that would bring him enduring posthumous fame. When his children donated his diary to the Minnesota Historical Society, they ensured the preservation of a remarkable document. The diary also received broad interest fifty years after Peterson's death when it came to the attention of Swedish novelist Vilhelm Moberg, who acknowledged its use in the preparation of his four of novels about Swedish emigrants, including The Emigrants (1951), Unto a Good Land (1954), The Settlers (1961), and The Last Letter Home (1961). In fact, the character Karl Oskar in Moberg's novels is said to have been based on Andrew Peterson. Interestingly, Andrew Peterson is perhaps better known in Sweden than he is in the United States. In 1998, Andrew Peterson Day was celebrated in his hometown of Sjöarp in honor of the 100th anniversary of his death, and, in 2003, The Andrew Peterson Society was established in recognition of his important contribution to the documentation of Swedish immigrant life.

SWEDISH IMMIGRATION TO NORTH AMERICA

From 1845, when the mass migration of people from Sweden to North America began, to 1930 when it ended, about 1,250,000 Swedes left their homes to settle in the New World. They represented 20% to 25% of all Swedes who were alive during those years. Most people left Sweden because of economic considerations, but some left because of religious discrimination or because they found the civil authorities too repressive.

More immigrating Swedes made their home in Minnesota than in any other state in the country and in time Minnesota became the center of Swedish America. The importance of Minnesota as a destination for Swedish immigrants was a result of the timing of the emigration and the settlement of the Minnesota Territory. In the 19th century, Swedes were attracted to Minnesota in such large numbers because it was there, more than anywhere else in the country, where opportunities for land and employment presented themselves just when the immigrants were in need of them.

At the time the immigration began, the agricultural frontier in the United States stretched through northwestern Illinois and across the Mississippi River into southeastern Iowa. There the first large Swedish agricultural settlements began and once established they continued to attract immigrants, and served as a springboard for later arrivals. Most Swedish immigrants disembarked in Montreal or New York City and proceeded

by train and boat to Chicago. Its proximity to the agricultural settlements made the city a logical destination. From Chicago, land seekers could reach the Mississippi River by road or boat, and after 1854 by rail. A relatively short journey by steamboat bought immigrants to St. Paul. No other land on the frontier was so accessible from Chicago, and it became even easier to reach with the completion of the first railroad to St. Paul in 1867.

The first Swedes arrived in Minnesota in 1850 and settled in Washington County. In 1854, 200 Swedes arrived in the Chisago Lakes area and about 10 families settled in Goodhue County. That same year a small number of Swedes staked claims on the left bank of the Minnesota River near the newly established town of Carver. This new settlement attracted more prospective Swedish settlers and while most of the land near the river was eventually taken, only a few miles to the west much land was still available. Four Swedish settlements were established in that area, and all were founded by settlers from Illinois and Iowa.[9]

The first settlement was established in 1855 on the eastern shore of Clearwater Lake by groups from Burlington, Iowa, and Galesburg, Illinois. One settler, anxious to attract more of his countryman, described the area in Hamlandet (The Homeland), a Swedish-language newspaper published in Chicago. In fact, he described the exact location where Andrew Peterson settled.

> This place lies ten miles northwest of Carver and constitutes, in my opinion, the most beautiful and best part of Carver County, lying on one of the most beautiful, if not the most beautiful lake in this state. . . . The lake is twelve square miles in size and is surrounded by forest of the most fertile nature. The forest consists mostly of sugar maple, mixed with other common varieties.[10]

Immigration continued to ebb and flow over the decades based on changing conditions in both Sweden and the United States. The Civil War, as well as the U.S. Dakota War, temporarily stemmed the tide of

9 John G. Rice, "The Swedes," in They Chose Minnesota: A Survey of the State's Ethnic Groups, ed. June Dressing Holmquist (St. Paul: Minnesota Historical Society Press, 1981), 248-253.

10 Rice, 253.

immigration from Sweden, but was revived in the late 1860s and 1870s as a result of crop failures in Sweden. But by the late 19th century, the typical Swedish emigrant was drawn to employment offered in larger cities such as Minneapolis and St. Paul rather than to rural, agricultural areas. Due to the large numbers of Swedes that made Minnesota their home, today Minnesota is considered the most Swedish state in the country.[11]

ANDREW PETERSON'S JOURNEY TO MINNESOTA

Anders Pettersson, who later Americanized his name to Andrew Peterson, was born on October 20, 1818 in Vastra Ryd parish in the province of Östergotland in southern Sweden. His parents, Petter Jonsson and Ingrid Samuelsdotter, were tenant farmers in Sjöarp. Andrew worked at home and later as a farm hand on other farms in the area. After his father's death in 1846, he moved back to Sjöarp to manage the family farm. But in the spring of 1850, Peterson left Sweden for North America along with his sister, Gustava, and fourteen others from the local community. They departed from Gothenburg on May 19, 1850. Peterson would never return to his homeland.

The immigrants crossed the Atlantic on the *Minona*, arriving in Boston on July 2, 1850. Four weeks later, Peterson arrived in Burlington, Iowa, where he would remain for four years. Little is known about his time in Iowa, but on January 1, 1855, he was working near Burlington for a nurseryman named Neally, doing carpentry work and grafting, an experience that would have a profound impact on his life. On April 23, 1855, he wrote, "Made up accounts with Neally and received $38.00." Peterson left Neally's employ because of his membership in a small Swedish Baptist group. The group was led by Fredrik Olaus Nilsson, Sweden's first Baptist minister, who had been prosecuted under Swedish laws prohibiting unauthorized religious gatherings. Nilsson immigrated to the United States, settling briefly in Burlington, Iowa, and then moved to Carver County, Minnesota. Peterson accompanied Nilsson to Minnesota along with a number of his followers. He recorded his trip via steamboat to Rock Island, Galena, and St. Paul. Peterson traveled from St. Paul to Carver County on the Minnesota River and on June 18, 1855, he reported that he had bought a claim for $25.00. The next day he remarked that he planted potatoes using a grubhoe. He

11 Rice, 248, 260.

then told how he cleared the ground for a cabin and cut logs.[12] His 160 acre property was located just to the east of Clearwater Lake, later renamed Lake Waconia, in an area then known as Scandia.



Figure 10: Plat book of Carver County, depicting the Andrew Peterson Farm (center), published by the Northwest Publishing Company, 1898. Minnesota Historical Society.

FARMING IN MINNESOTA IN THE 19TH CENTURY

In order to understand the Peterson Farmstead within its historic context, it is helpful to begin with a review of the major historical forces that shaped Minnesota farms in the 19th century. Historians Susan Granger and Scott Kelly developed the historic context "Euro-American Farms in Minnesota, 1820-1960," and divided the context into eight developmental periods. Three of the periods are associated with the 19th century and thus relate to Andrew Peterson's lifetime: Early Settlement, 1820-1870; Development of a Wheat Monoculture, 1860-1885; and Diversification and the Rise of Dairying, 1875-1900.[13]

12 Carlton C. Qualey, "Diary of a Swedish Immigrant Horticulturist, 1855-1898," Minnesota History 43, no.2 (Summer 1972): 64.

13 Susan Granger and Scott Kelly, Gemini Research, "Historic Context Study of Minnesota Farms, 1820-1960," prepared for the Minnesota Department of Transportation, June 2005, 3.1

Period 1: Early Settlement, 1820-1870

During the early settlement period, millions of acres of land west of the Mississippi River were acquired by the United States government through land cession treaties with Native Americans. European-American pioneers then moved onto the undeveloped land, many attracted by federal government incentives. Large numbers of immigrants poured into Minnesota between 1854 and 1857 when 5,250,119 acres of public land were sold. They were also encouraged by the availability of water and trees. In addition, immigration was also facilitated by the creation in the mid-1850s of a combined river-rail transportation route between Minnesota and the East Coast via Chicago.[14]

Dramatic events in the 1860s also shaped Minnesota farming. The first major event was the Civil War that began in 1861. Wartime demand led some Minnesota farmers to raise tobacco, sorghum, and sheep when the Union army needed wood for uniforms and blankets. And while the war also caused some labor shortages, most of the disruption occurred east of the Minnesota and large numbers of farmers lived through the war years relatively undisturbed. In fact, during this period Minnesota wheat production nearly doubled. More disruptive was the U.S.-Dakota War of 1862 in which hundreds of Euro-American settlers and Native Americans were killed. Many parts of south central and southwestern Minnesota were virtually depopulated for several years. The scare was so intense that in nineteen counties none of the settlers returned to their homes prior to November 1863.[15]

Agriculture in Minnesota developed slowly, and was only able to advance as fast as technology would allow. With virtually no improved roads in the state, settlement followed navigable rivers, which were blocked with ice during the winter. Connections between Minnesota and outside markets were also limited and inadequate transportation systems prevented the dissemination of goods and services that made farming easier.

Farming itself was constrained by limited technology. Fields had to be painstakingly created by hand-cutting trees and grubbing stumps, or by breaking thick prairie sod. Many settlers did not know how to break land or had the wrong kind of plow. Others had no horses or oxen and had to hire someone to complete the work. In 1860, J. W. McClung,

14 Granger, 3.3-3.6.

15 Granger 3.6.

the Minnesota commissioner of statistics, estimated that it cost $795 to open a farm, including the price of implements, provisions, oxen, cows, a team and a wagon, breaking about twenty acres, and building a house and fence. But immigrants supported each other and ethnic enclaves often formed. Yet, by the end of the early settlement period in 1870, much of the state was agriculturally undeveloped.[16]

Period 2: Development of a Wheat Monoculture, 1860-1885

As Minnesota farmers began to move out of their subsistence phase and into commercial agriculture, the majority grew wheat as their exclusive cash crop. Wheat farming first developed in southeastern Minnesota where grain could be shipped to market on river boats. Around 1870, yields began to decline at the same time that land prices were rising. As southeastern farmers began to diversify to maintain profitability, the wheat monoculture shifted to the state's new frontier – the vast western territories now accessible by a new network of rail lines.

Railroads played a complex and major role in agricultural development beyond providing a transportation system for settlers, and for the products they produced on their farms. To encourage investors to construct rail lines, Congress granted rail companies 10 million acres of free public land in Minnesota. The railroad companies sold parcels of this land to prospective farmers and encouraged them to settle along the tracks, to trade in railroad-platted town sites, and to patronize grain elevators and lumberyards that the railroad or an associate owned.

Technological advances also had an important impact during this period. Mechanical developments including new reapers, threshers, and self-binders made wheat production more efficient. There were also advances in the flour milling process, such as the middlings purifier, which made Minnesota hard spring wheat just as viable for bread flour as high-quality winter wheat. On a biotechnology front, plant breeders had produced Red Fife, North America's first hard spring wheat. Red Fife could thrive in northern latitudes and was successfully grown across Minnesota.

Ultimately, Minnesota led the nation in wheat production, Duluth became the country's premiere grain shipping port, and Minneapolis became the international leader in flour milling. But years of exclusive wheat culture

16 Granger, 3.8-3.9.

eventually caught up with Minnesota farmers. Deteriorating soil quality, repeated outbreaks of a fungal disease called "rust," and invasive weeds like Russian thistle, which moved into Minnesota in about 1890, depressed yields and farm income. By the late 19th century, experts were urging farmers to diversity and Minnesota agriculture entered a new era.[17]

Period 3: Diversification and the Rise of Dairying, 1875-1900

In the 1870s, economic forces compelled Minnesota farmers to move from wheat farming into higher-grossing enterprises such as horticulture, raising sheep or poultry, hog or beef production, and dairying. In 1867, the Minnesota State Agricultural Society issued an early call for diversification when it adopted a resolution stating that "the continual cropping of wheat, year after year, in the same field, without a change of seed, is bad farming, and ought to be discouraged."[18] Farm diversification, which clearly characterized Andrew Peterson's farming operation, was also prompted by the agricultural press and by the nation's young agricultural colleges, farmer's organizations, and experiment stations. Steady mechanization, which had begun with the adoption of many new horse-drawn implements in the mid-19th century, also helped farmers diversify.

Diversification was also prompted by corporate interests, such as railroad companies that were rapidly building lines across central and western Minnesota. James J. Hill was well aware of the enormous capital investment that the railroads had made and he could not afford to have the soil "give out." Hill and others encouraged farmers to use "dual-purpose" beef-dairy cows; add poultry, beef cattle, sheep, and hogs to their farms; and plant alternative crops like potatoes and sugar beets.

Diversification protected farmers from the failure of a single crop, and it also had other advantages. Bringing in regular "egg money" and a "milk check" improved cash flow, which under a wheat-only regimen, was dependent on a single payment for the grain harvest in the fall. Raising livestock or poultry made better use of the family's total labor pool, including children. Diverse operations also spread farm labor more evenly throughout the year: corn required work in the spring and

17 Granger, 3.15-3.21.

18 Quoted in Granger, 3.28

fall, alfalfa needed labor in the summer, wheat in summer and fall, and milking and stock-fattening used winter labor. With a mixed crop and livestock systems, the farm could also make use of farm by-products. Livestock could be let into the fields to eat crop residue missed during harvest, animals could be fed crops that failed to ripen, and excess skim milk could be fed to young pigs and calves. Manure could be spread on the fields to increase fertility, and land that was too step or rocky for tilling could be used for pasture. Even the process of grazing (e.g., the trampling of hooves, dropping of manure, and shearing of plants) could have a beneficial effect on pastureland if well managed. Rotating crops, important to diversification, improved soil texture and fertility. Good rotation could also ensure that a feed crop, a cash crop, and a soil-building crop were always being grown.

As most farmers worked to diversify, dairying became an important substitute for wheat and ultimately a consequential force in the Minnesota economy. Dairy farming was also a natural choice for Minnesota farmers, many of whom had come from places like Scandinavia where dairying was important. Dairying was especially prominent in this period in Houston, Fillmore, Winona, Faribault, Freeborn, Mower, Carver, Otter Tail, Douglas and Stearns Counties. Dairy farming was also labor intensive and a family enterprise. Everyone, even young children, helped milk the cows twice a day and do other chores. Women often led the milking process, separated cream, made butter and cheese, and cleaned all the equipment. Men and older boys traditionally cleaned the barn.

Minnesota dairying was stimulated by other innovations as well. In the 1850s and 1860s, a Carver County farmer, Wendelin Grimm, developed "everlasting clover," a vigorous strain of alfalfa that could survive Minnesota winters. Grimm's alfalfa was a nutritious feed for beef cattle and dairy cows that yielded three or four cuttings a year. It also enriched the soil with nitrogen. Silos (air tight structures that preserved green fodder for the winter months) transformed the profitability of dairy farming and helped spread dairying throughout Minnesota. The state's first silos were built in the late 1880s and by World War I they were becoming a standard feature on a farm. Silos allowed farms to feed dairy cows nutritious green material year-round, which encouraged them to remain "milk-producing" through the winter. Other mechanical advances, such as the invention of the milking machine, also made dairy farming more efficient.

Concurrently, as dairying advanced, farmers formed the State Dairyman's Association in 1878 and the Minnesota Butter and Cheese Association in 1882. Processing and marketing systems also developed, and farmers learned how to improve their stock to become more productive.

The effect of diversification on Minnesota's built environment was profound. Livestock farming, and especially dairying, required farms to make significant capital investments for new buildings and equipment. Two-story barns (usually housing animals below and feed such as hay above), silos, corncribs, and fenced fields became a significant part of Minnesota's rural landscape, as did a wide array of other structures related to animal husbandry. Diversified farming dominated Minnesota agriculture until the late 1950s.[19]

LIFE ON THE PETERSON FARM



Figure 11: The Peterson family, left to right, Andrew, Elsa, Oscar, Anna Isabelle, Josephine, Ida, Emma, George (Sture), John (Axel), Charles (Carl), and Frank.May 8, 1885. Photo Carver County Historical Society.

When Andrew Peterson first arrived in Carver County, he boarded with Reverend Nilsson, and ate meals with the minister and his wife. But he began work on a log cabin or "shanty" on his property. He moved into his new home on November 15, 1855. His diary entries from this time describe the myriad tasks in which he was involved while working to clear land for cultivation and establish his farm. During the winter of 1856, he cut rails for fences, and on March 11, he wrote, "Cut rails all day. Now have 2,000 rails." A week later another activity was

19 Granger, 3.28-3.36.

described which was to take place each year: "Made wooden troughs in which to gather maple sap." On May 20, he wrote, "Last night we fished. Got the boat full. Got home at noon. Then I planted potatoes and grubbed the place for my cornfield." On May 23, he wrote, "We church folks planted corn for Nilsson."[20]

In August 1856, he worked in Carver for two weeks and earned enough money to buy a stove and provisions. He was also attending English language classes. On October 11, 1856, he was appointed to a public position. He wrote, "Was home and did a little of everything. Received our order from the County Commissioner that I have been appointed road supervisor." On November 22, Peterson noted, "My cow calved yesterday. It was a heifer."

An unusually long diary entry on November 28, 1856, describes the symbiotic relationship that existed between friends and neighbors in the pioneer community. They depended upon one another, and at times a unique barter system was in place.

> Borrowed Jonas Broberg's oxen to haul logs for the fence on the other side of the maple. Alfred was also here with his oxen and hauled logs. He owed me 2½ days work, one day I counted off for the oxen and the half day I counted off for the sinkers he made for the seine and the mending of the net. In the evening Nilsson and I made up our account for the last period of the boarding and the 6½ days of work I had done during that time, also for the five days of work I had done and the boards I had given what should count off when I built his cow shed because of the board I had had when I built mine.

On May 19, 1857, Peterson took a significant step in what was to become his important work in horticulture when he went to Carver to buy a grafting box. In August, he began work on a larger log cabin. In the fall, he spent considerable time helping to build the Baptist church in Scandia. On August 6, 1857, he began construction of a larger house, referred to as the log cabin. Just over four months later, he wrote that he was ready to enlarge the cabin.

20 Qualey, 63-64.

On September 15, 1858, Peterson married Elsa Engeman. His diary entry about the event is included with his other activities that same day. "In the morning I was over at Johannes and chopped cornstalks. At noon John went home with me and started plowing for the wheat. In the evening at 5 o'clock Elsa and my expectations became a reality, a marriage." At the time Andrew was nearly forty years old. Elsa was twenty-three.[21] Over the course of the next 16 years, Andrew and Elsa Peterson had nine children: Ida (1859-1900), George, known as Sture (1861-1928), John, known as Axel (1862-1930), Charles, known as Carl (1865-1941), Frank (1867-1921), Emma (1870-1943), Anna Isabelle (1872-1889), Josephine (1875-1908), and Oscar (1878-1941).

On July 16, 1862, the local assessor visited the farm and valued the property. Peterson's diary entry about the assessor's findings provides a precise snapshot of his farming operation. He not only explains how his 160 acres were being used, and its value, but he also includes a list of all the farm animals and their value, as well as the value of his personal property and cabin. "Today the assessor was here. I have 30 acres of non-usable swamp land, 9 acres broken land at $7.00 an acre = $63.00, 121 acres unbroken land [at] $2.00 an acre = $144.00 but he valued it at $330.00. Personal property:

One pair of oxen at $25.00
One ox at $12.00
And one ox at $8.00
Three cows with calves at $37.00
One heifer at $8.00
Three calves at $12.00
Two ewes with lambs at $4.00
Five pigs at $4.00
Household goods at $10.00

Altogether: $120.00

The log cabin [is] $10.00 so my taxable property is valued at $330.00 real property and $120.00 personal property."
Just over a month later, the Petersons were impacted by broader events that surrounded them. On August 20, 1962, after the U.S.-Dakota War

21 Josephine Mihelich, Andrew Peterson and the Scandia Story (Minneapolis: Ford Johnson Graphics and Josephine Mihelich, 1984), 39-40.

had begun, Peterson wrote, "We had an Indian scare so we fled out on the island in Clearwater Lake. We stayed until [the] evening of the 21st then went home." The diaries contain additional entries about the war. On August 24, he wrote, "Sunday, just as we started the meeting Andrew Swenson came and told us we must leave at once to fight the Indians. The meeting broke up and we all hurried home to get ready but then we decided to wait for more definite orders." Finally, on September 7, he wrote, "We are more peaceful about the Indians today."

He also makes several references to the Civil War. On April 30, 1862, he wrote about a "day of repentance and prayer," proclaimed by President Lincoln. On November 24, 1864, he also mentions the president's request for a day of prayer.

Diary entries in the 1870s record the relentless activity on the farm. On May 17, 1876, he wrote, "In the morning picked up roots and sowed barley on the new broken field. In the afternoon marked out for corn." On May 19, he wrote, "Planted corn in the orchard, hauled manure for the potatoes, built a bridge over the ditch in the meadow." On May 23-26, he wrote, "Repaired old fences and planted squash; Repaired fences all day; Let the cattle out on the south forty and repaired fences." On August 18, he wrote, "First I went over to Scandia and then did various things. Sture plowed. Ida and Carl helped Freed to tie wheat bundles in the afternoon. I pruned back grape vines." But there were also personal references. On October 6, 1876, he wrote, "Drove Elsa over to Watertown as she is going to Litchfield to see her mother who is dying."

Technological advances were also taking place that made farm work more efficient. On August 23-24, 1876, Peterson wrote, "In the afternoon I went to Lomer to find out what time the machine would come to our place. . . . In the evening Broberg's steam thresh machine arrived at our place. The next day, "We threshed and were through at 4:30. We were 18 persons besides the men that tended to the machine, then the machine went to Lunsten's place." He also mentions the grasshopper plagues that occurred for several years in the 1870s in Minnesota. In August 1876, he wrote, "The 19th the grasshoppers began to come and since then more have come each day. By the 31st the air was so full of them that when you looked at the sun it looked as if it was snowing. He also describes a devastating storm on July 30, 1878.

> This morning we finished reaping the wheat on the square field and made two turns with the reaper on the

> west piece of the south field when about two o'clock, it started to rain, and then it hailed! I have never see anything like it. Hail stones as large as goose eggs. Thirty-five window panes were shattered in our house by the hail stones. The wheat was pounded down and so about 250 bu. of wheat destroyed and 6 acres of corn. The sorghum also was destroyed, but the worst of all was that the bark was scaled off the apple trees. In other words, everything in the path of the storm was destroyed.

But the diary entries also mention social and community events, and various meetings. And Sunday generally seemed to have been a day of rest. The Petersons visited friends and family who lived nearby, and participated in other activities, such as Fourth of July celebrations. Peterson was also involved in the community. On March 13, 1877, he wrote, "In the morning I went to the election. In the afternoon I went to the examination of the children in the school house. We also had a meeting of the school board. In the evening the teacher and school children gave a concert. The singing was accompanied with organ music." The Petersons also attended the local fairs. On May 27, 1876, Peterson wrote, "Went to Carver to the agricultural meeting. We voted on whether the fair should be held in Carver or Waconia. Carver won so the fair will be held there next fall."

Peterson also corresponded with family members who remained in Sweden, and kept in touch with family members who had also immigrated to the United States. But an entry in Peterson's diary dated December 12, 1876, describes the impact of limited travel opportunities during the pioneer era. He wrote, "…in the afternoon my brother Carl from Colorado and my brother-in-law, John and my sister, Maja Stina, came here. I have not seen my brother Carl for twenty-one and a half years."

Peterson was becoming a successful farmer, in part because of increased diversification that ensured multiple sources of income along with subsistence farming. He produced wheat, oats, barley, corn, alfalfa, potatoes, rutabagas, vegetables of various types, sugar beets, many varieties of apples, pears, grapes, plums, cherries, gooseberries, raspberries, strawberries, currants, maple syrup, molasses, wine, eggs, milk, butter, and cream. He also raised cattle, pigs, sheep, and poultry. He exhibited at the Carver County Fair and the Minnesota State Fair

and won prizes.[22] On September 27, 1879, he described his entries at the fair in Carver. "Sture, Axel, Frank, Ida, William Hopp and I went to the fair in Carver. I showed our spring wheat, rye, Wealthy apples, Duchess, Haas, Canada, Hyslop, King Winter apple and of our grapes, Isabella, Concord, Delaware, Iona and Rodgers #15. Later, he wrote, "…I went to the Carver market and also collected my prize money for the apples and grapes."

Peterson's increasing prosperity is reflected in the built environment on the farm. On March 20, 1867, he began construction of his third and final farmhouse. It was a substantial two-story log building that was later sided with wood. The family moved into the new farmhouse on November 14, 1870. A kitchen addition, constructed with brick, was built in 1881. In addition, three barns were built within a span of ten years: the 1874 horse barn, the 1884 cow barn, and the 1887 pig barn. There were also a series of ancillary structures constructed on the farm including a granary, corn crib, chicken house, workshop, and fireplace for processing maple syrup and sorghum. Peterson also bought a second farm. In 1885, he paid $1,500 for a 240 acre farm near Maynard in the vicinity of Granite Falls, which his sons would farm.[23]

Two photographs of the farm taken on May 4, 1885, along with Peterson's detailed diary entries, provide an unusually complete and accurate physical description of the farm and its operation.



Figure 12: Photograph taken on May 4, 1885.
Photo Carver County Historical Society.

22 Qualey, 66.

23 Mihelich, 82.



Figure 13: Photograph taken on May 4, 1885.
Photo Carver County Historical Society.

The diary entries are generally matter-of-fact, and routinely describe the events of the day. However, on a few occasions Andrew Peterson expresses his deep emotions, most notably upon the death of his daughter:

> Today we met with an intense sorrow when our beloved daughter, Anna Isabelle, died 15 minutes past twelve. She was born May 14, 1872, and died September 19, 1889, at the age of 17 years, 4 months and 5 days. She was always so kind, quiet and tolerant that our loss and sorrow is heart rending to all of us, but in all our deep sorrow, we have this comfort that she went away happy in her faith on her dear Saviour. . .

He went on to explain that, "Later in the afternoon we went to Waconia and sent a telegram to Sture and Carl in Granite Falls telling of her death. We also ordered a casket." On September 21, he wrote, "Frank went to Augusta and met Sture and Carl." Later that day, Axel and Frank dug the grave for their sister.

The funeral was held on September 22, 1889. "Today we buried our beloved daughter, Anna Isabelle. Rev. M. Fridlund arranged about the songs and preached the funeral sermon. His text was the 90th Psalm, a prayer by Moses." Peterson also listed the hymns they had sung. Some years later, on June 4, 1892, he wrote, "After dinner the boys and I set up the grave stone on Anna's grave."

The rhythm of life on the farm continued. On November 20, 1889, Peterson wrote, "In the morning Carl went to Waconia and had 'Frank'

and 'Mag' shod. Axel and Sture burnt brush and logs by the old hog pen. Sture and Carl hauled cord wood to Waconia." On May 24, 1892, he wrote, "This morning at five Mamma, Emma and Frank started to drive to Minneapolis. They had sheep hides, wool, butter and eggs along."

There were also additional physical improvements made to the farm in the 1890s. Peterson purchased an ice box in 1891 and in 1892 an icehouse was built to store the ice. In 1891, a new well, 180 feet deep, was drilled and a windmill was installed to pump the water. The farm had a well, and later multiple wells, from its early days. But the early wells were likely shallow, hand-dug wells that were often unreliable. On April 9, 1878, Peterson wrote, "…we hauled home water from the lake." On November 7, 1889, he wrote, "Frank hauled four tanksfull of water from the lake and emptied it into our well by the house." Perhaps by that time it was decided a new, deep well was needed, and with the mechanical assistance of a windmill.

Andrew Peterson had health issues over the years and in June and July 1896, he complained that he was not well and was spending periods of time in bed. He continued to complain about this health, but still completed tasks as he was able, and remarked that he voted in the presidential election November 3, 1896. He seemed to improve in 1897 until late in the year. In January and February 1898, he worked on apple grafts and other tasks in his shop. But by mid-March his health was failing.

Andrew Peterson died on March 31, 1898. His last entry in his diary was dated March 29, 1898. His last sentence read, "It is clear weather but not mild weather." After Peterson's death, his family continued to operate the farm, as well as the farm near Maynard. Eventually, Frank and then Carl left the farm in Maynard, where Emma, and sometimes Josephine, assisted them, and returned to the family home. At the time Elsa died on March 8, 1922, Axel, Carl, Emma, and Oscar were also living in the family home. Ida, Frank, and Josephine had previously passed away, and Sture was living in Maynard with his wife.24 Emma Peterson, the last surviving child of Andrew and Elsa, died on May 17, 1943. While several of the nine Peterson children married, none had children of their own. Nonetheless, through his diaries, Andrew Peterson ensured that the family's legacy would live on.

24 Mihelich, 84-85, 145.



Figure 14: Undated photograph, ca. 1910s, perhaps picturing (left to right) Frank, Elsa, Oscar, Emma, and Axel Peterson. Photo Carver County Historical Society.

EXPERIMENTS IN HORTICULTURE

Peterson began to use his experience at Neally's nursery in 1856, and his efforts were stepped up in the spring of 1857 when on May 19 he "went to Carver after a grafting box." On each of the next four days he planted apple grafts. During the spring of 1858 he recorded receiving a box of grafts and planting them with the appropriate labels. In time, Peterson's efforts were increasingly devoted to horticulture. In October and November of 1871, he spent every day in the orchard. His work was only interrupted by a trip to nearby Excelsior on October 24 to obtain apple trees.

Peterson began experimenting to determine which varieties could survive Minnesota winters and which could resist blight. He grafted apple trees and later pears and grapes. He obtained scions from as many varieties as he could obtain. On March 8, 1873, he wrote, "This winter I have grafted 404 apple trees, 13 pear trees, 30 plum trees, and 12 cherry trees." Each fall he dug up the small apple trees and the grape roots, dug trenches, and "heeled them in" for the winter.

Peterson's increasingly large-scale operation brought buyers that began to visit him to purchase young trees. Although he sold harvested apples by the box in nearby markets, he realized he would earn more my selling young trees, seedlings, grafts, and scions.[25] On September 29, 1875, Peterson wrote, "The apple tree agents from Minneapolis are here today." He also began apple tree shipments to nurseryman in Minnesota, Iowa, and Wisconsin and he began corresponding with agricultural experiment men such as Professor J. L. Budd of Ames, Iowa, and Professor Samuel B. Green, who was a Professor of Horticulture in the Department of Agriculture at the University of Minnesota. He also corresponded with numerous nurseryman in the region, including F. G. Gould of Excelsior, Charles Hawkinson of the Rose Hill Nursery of St. Paul, Clarence Wedge of Albert Lea, O. F. Brand of Faribault, Oliver Gibbs of Lake City, A. Holtz of Brainerd, J. S. Harris of La Crescent, C. G. Patten of Charles City, Iowa, and K. K. Phoenix of Delavan, Wisconsin.[26]

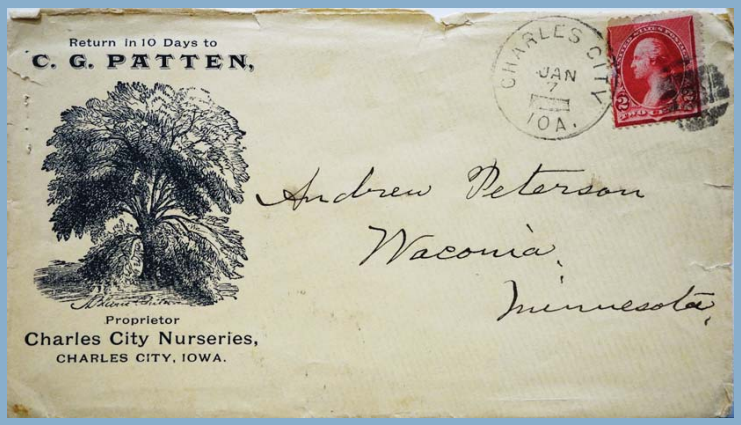


Figure 15: Envelope from an 1893 letter to Andrew Peterson from C. G. Patten of the Charles City Nurseries, Charles City, Iowa. Peterson and family papers, Minnesota Historical Society.

On August 28, 1883, Peterson wrote, "Today Oliver Gibbs from Lake City came here. I gave him seven kinds of Russian apples that are to be sent to the large exhibition [of the American Pomological Society] to be held in Philadelphia, September 12, 1883." Gibbs was then the secretary of the Minnesota Horticultural Society. On November 9, 1883, he wrote that "After dinner secretary Gibbs . . . and Mr. Gould . . . were here and I gave them scions from the Russian apples for

25 Qualey, 65-66.

26 Qualey, 67.

distribution to the horticultural society. I gave them scions from the Hibernal, Lieby, Ostrekoff Glass, and Charlamoff." On September 30, 1884, he noted, "I went to Gould . . . with apples that are to be sent to the World Industrial Exposition in New Orleans."[27] On November 20, 1889, he reported, "Today I sent 700 Lieby and 50 Red Checked apple scions to O. F. Brand in Faribault."

In 1884, Peterson became a member of the Minnesota Horticultural Society, which was founded in 1877. He attended meetings of the society on January 19-24 and June 19, 1885. He sent the following report dated June 19, 1885 to the society, which was subsequently published.

> I send you a short report on the condition of apple trees after the past severe winter at my place. Most of the Wealthy are entirely killed and the rest are so badly damaged they will probably die [in] another year. The Duchess is damaged a good deal. Some of the Russian varieties, perhaps eight or ten, are injured more or less; some of them I suppose will die. Little Seedling and Transparent are not hardy trees. The Christmas apple seems hardy. The varieties that withstood the past hard winter are the following: Hibernal, Ostrekoff's Glass, Charlemoff, Lieby, Red Checked. . . . I have been in Minnesota over 30 years but I never saw so much damage done to fruit trees as we have had from the past winter.[28]

The society published another report by Peterson in 1886. In 1888, the society published a long essay by Peterson entitled, "Report on Russian Apples," dated December 21, 1887. Peterson stated that the winter of 1886-87 had caused severe damage to his trees, but again the Russian apples had survived. On August 25, 1891, Peterson reported that, "About noon President (Wyman) Elliot (Minnesota State Horticultural Society) and Prof. Green came to look at the orchard."

Professor Green wrote a long account of his visit to the Peterson farm in

27 Qualey, 67.

28 Quoted in, "The Society 100 Years Ago," Minnesota Horticulturist (January 1986), 13.

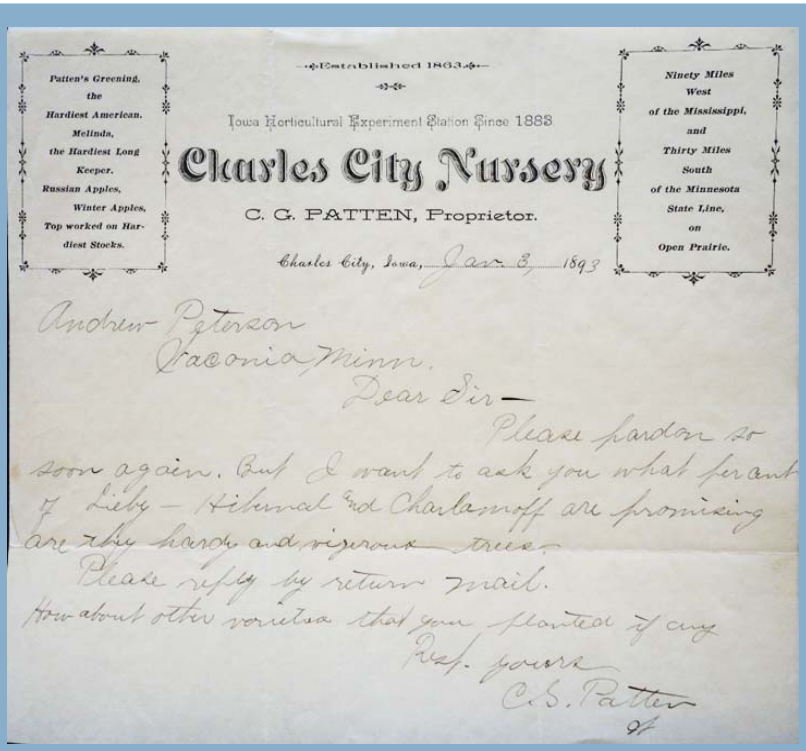
an article, "Apples to Grow," in the September 15, 1891 issue of Farm, Stock and Home. Green wrote:

> His whole farm shows systematic care and intelligent management. It was the orchard, however, that we were most interested in and came to see. Mr. Peterson showed us every attention and spent several hours with us in his orchard. In whatever he told us we were impressed with his impartiality, discrimination and thorough knowledge of the subject.[29]

Peterson's last printed essay, and his longest and most detailed, was published by the Minnesota Horticultural Society in 1893. He stated he had tried over 100 varieties of Russian apples and had good experience with the Christmas, Plikanoff, Hibernal, and Charlemoff, "one of the best eating apples of all the Russians," and Ostrekoff Glass. He also had success with the English Borovinka and "shall plant them instead of the Duchess." He stated that "of the five varieties I got from C. G. Patten, Charles City, Iowa, those he called Patten's Greenings are the best."[30]

29 "Apples to Plant," Farm, Stock and Home, September 15, 1891, quoted in Qualey, 68.

30 Qualey, 67-68



Patten's Greening, the Hardiest American. Melinda, the Hardiest Long Keeper. Russian Apples, Winter Apples, Top worked on Hardiest Stocks.

Established 1863

Iowa Horticultural Experiment Station Since 1888

Charles City Nursery

C. G. PATTEN, Proprietor.

Charles City, Iowa, Jan 3, 1893

Ninety Miles West of the Mississippi, and Thirty Miles South of the Minnesota State Line, on Open Prairie.

Andrew Peterson
Lacconia Minn.

Dear Sir—

Please pardon so soon again. But I want to ask you what per cent of Lieby — Hibernal and Charlamoff are promising are they hardy and vigorous trees.

Please reply by return mail.

How about other varieties that you planted if any

Resp. yours

C. G. Patten

Figure 16: Letter dated January 3, 1893 from C. G. Patten of Charles City, Iowa, asking Peterson about his experience with Lieby, Hibernal, and Charlamoff apples. Andrew Peterson and family papers. Minnesota Historical Society.

In his report, Peterson also corrected a statement made by Professor Green in the 1891 article in *Farm, Stock and Home*:

> In Prof. S. B. Green's report in the 'F. S. & Home' of Sept. 15, '91, is a little mistake. He says I commenced selling apple trees in 1872. I think he misunderstood me when I said I planted the first Russian apple tree 18 years ago. I commenced planting apple grafts in 1856. That spring I planted a thousand—bought from Neally's nursery, Burlington, Iowa, the same nursery that I worked in before, and in 1857, I bought another thousand grafts, altogether about 50 or 60 varieties…[31]

Professor Green continued to visit the Peterson farm, a clear acknowledgment of Peterson's expertise. On May 31, 1892, Peterson

31 Minnesota Horticultural Society, Annual Report, 1893, quoted in Qualey, 68.

wrote, "Today Prof. Green from St. Anthony Park came to hybridize the apple blossoms. He and his farm hand worked with that all day, and I helped every once in a while." Green and his assistant must have spent the night because the next day Peterson reported, "This morning Prof. Green and his farm hand returned home by way of the north line." Green returned on June 30 and Peterson noted, "Prof Green. . .was here today and put mosquito netting over the hybridized flowers." A particularly memorable visit took place on August 26, 1896. "At 11 o'clock Prof. Green and a photographer, McIntosh, from Hamline came here. They took pictures of several of the apple trees, the large white ash and also of our family." One of the photographs was the iconic image of Peterson standing by his apple trees.



Figure 17: Andrew Peterson in his apple orchard, 1896. Photo Minnesota Historical Society.

In recognition of Peterson's contributions, the Minnesota Horticultural Society voted him a Lifetime Honorary Membership in 1888. His work was particularly important because he determined which varieties of apples were viable in Minnesota, which is much colder than most fruit-producing regions. After his death in March 1898, the society's annual report published in May of that year carried Peterson's photograph as the frontispiece and tributes from the secretary and Professor Green, whose comments summarized both Peterson's personality and his horticultural achievements:

Andrew Peterson was a man of sterling integrity and a lover of everything

that he believed worked for the building up of Christian character. He loved truth, he was patient, thorough, persistent, careful and enterprising. In his very successful efforts to better Minnesota horticulture, all these features of his character were prominent. . .

Soon after Mr. Peterson came to Minnesota he set out quite an orchard, and among the trees were some Hibernal, which had then been recently imported from Russia in the attempt to get varieties that were adapted to this section where all those of the old list had failed. . . . A little later Mr. Peterson planted a large number of varieties of Russian apples and brought into favorable notice the Anisim, Peterson's, Charlamoff, Cross and Christmas. He also tried many native seedlings and Swedish varieties. . . .

His location in Carver County was so far north that his experiments were of unusual interest and value to the people of Minnesota. His work, in fact, amounted to his carrying on at his own expense and in a most careful way for more than a quarter of a century what amounted to a private experiment station. He proved to the people of Minnesota that apples could be profitably grown in this section; that some of the varieties imported from Russia were especially adapted to this section and could be depended upon. He also showed that many of them were worthless, and his labor of sifting the good from the bad Russian varieties of apples has been very helpful and valuable. He was a natural investigator and freely imparted the results of his experience. His reports to the Horticultural Society from year to year have done much to encourage the development of pomology in Minnesota and surrounding states.[32]

ANDREW PETERSON'S DIARIES

Andrew Peterson's diaries, cash account books, and surviving correspondence were donated to the Minnesota Historical Society by his family in 1939. Referred to as the Andrew Peterson and family papers, the collection consists of several unnumbered volumes that include a diary from 1850-1853 and a notebook with entries from 1854-1856. Volumes 1-7 represent the diaries dated from June 1854 to March 1898. Volumes 8-10 represent the cash account books dated from September 1875 to March 1898. The cash account books are organized into

32 Annual Report, 1898, 193-194, quoted in Qualey, 69-70. JoAnne Ray, "Early Society Leader Honored As Exemplary Emigrant to the New Land," Minnesota Horticulturist 107, no. 8 (October-November, 1979): 241-242.

separate sections for income and disbursements. The society arranged for the translation of the Swedish-language diaries and cash account books into English by Emma M. Ahlquist through a project sponsored by the New Deal's Works Progress Administration (WPA). The collection also includes the English translations.

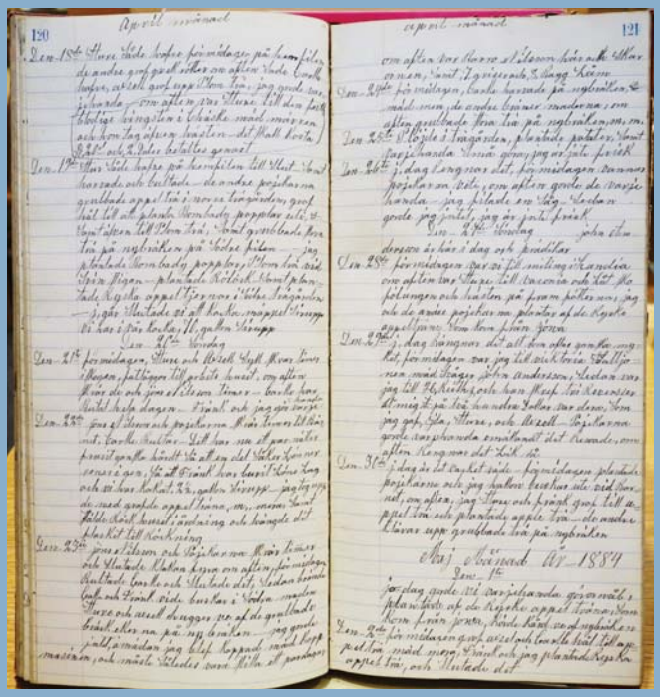


Figure 18: Diary entries from 1884. Andrew Peterson and family papers, Minnesota Historical Society.

Peterson's last entry is his diary is dated March 29, 1898. He died on March 31, 1898. The last entry in the cash account book for income was dated March 28, 1898. Peterson noted he sold 40 bushels of wheat at 88 cents per bushel for a total of $31.35. But Peterson's children continued to enter transactions in the account book beginning on the next page. The difference, however, is that the children's entries were written in English rather than Swedish.

Historian Carlton C. Qualey stated the diaries are, "unique in the collections of the Minnesota Historical Society and probably one of the few of its kind anywhere. . ."33 The website for the Andrew Peterson Society in Sweden goes one step further stating, "Andrew's farm and

33 Qualey, 63.

his diaries are fascinating and important historical sources. Combined, they probably make up the most complete account of a Swedish settler's life in North America."[34]

CHRONOLOGY

1818 Andrew Peterson is born on October 20, 1818 in Sjöarp, Sweden.

1850 Peterson immigrates to the United States, settling first in Burlington, Iowa.

1855 Peterson moves to rural Carver County, Minnesota, in June 1855. He purchases a 160 acre farm.

1857 Peterson took an important step in his experimentation with apple trees when he travels to Carver on May 19, 1857, to buy a grafting box.

1858 Peterson marries Elsa Engeman on September 15, 1858.

1859 Ida, the first of Andrew and Elsa's nine children is born on August 5, 1859.

1862 On August 20, 1862, during the U.S.-Dakota War, the concerned Peterson family spends the night on an island in Clearwater Lake, returning home the next day.

1870 Construction on the third and final farmhouse is completed.

1870-1880s The farm continues to expand and prosper. Three new barns are constructed.

1888 Peterson is awarded a lifetime honorary membership in the Minnesota Horticultural Society.

1898 Andrew Peterson dies on March 31, 1898.

1922 Elsa Peterson dies on March 8, 1922.

34 Andrew Peterson Society, accessed July 19, 2017, http://www.andrewpeterson.se/web/sv/who-was-andrew-peterson.

1939 Andrew Peterson's diaries are donated to the Minnesota Historical Society by his family.

1943 Emma Peterson, Andrew and Elsa's last surviving child, dies on May 17, 1943.

1951 Vilhelm Moberg publishes The Emigrants, the first of four novels about Swedish emigrants. Peterson's diaries provide inspiration for the novels.

1978 The farmstead is listed on the National Register of Historic Places.

2012 Carver County Historical Society acquires the Peterson Farmstead.



PRESERVATION TREATMENT PHILOSOPHY

IDENTIFYING THE HISTORIC SIGNIFICANCE OF THE SITE

Establishing the Significance of the Site

The first and most basic step in establishing a preservation philosophy is understanding the historic significance of the site. To that end, the National Register Nomination for the Andrew Peterson Farmstead from the late-1970's and the developmental history of the Farmstead compiled for this report are helpful. The site derives its significance from its association from Andrew Peterson and his horticultural and agricultural innovation.

If the National Register Nomination were updated, which is recommended, Criterion A and B would likely be the criterion for establishing the significance of the site. The following is an explanation of those criterion from the National Park Service:

> *Criterion A: For the site of an important event, such as a pivotal five-month labor strike, the period of significance is the time when the event occurred. For properties associated with historic trends, such as commercial development, the period of significance is the span of time when the property actively contributed to the trend.*
>
> *Criterion B: The period of significance for a property significant for Criterion B is usually the length of time the property was associated with the important person.*

Identifying the Period of Significance

The **period of significance** directly relates to the **historic significance** of the site. The explanation provided by the National Park Service is as follows:

> **Period of significance** *is the length of time when a property was associated with important events, activities, or persons, or attained the characteristics which qualify it for National Register listing. Period of significance usually begins with the date when significant activities or events began giving the property its historic significance; this is often a date of construction. For prehistoric properties, the period of significance is the broad span of time about which the site or district is likely to provide information; it is often the period associated with a particular cultural group.*

The period of significance, therefore, is identified as the lifetime of Andrew Peterson as the site derives its historic significance from him and his work is well-documented in his diaries.

Study into Andrew Peterson's family and their work on the farm has been conducted to explore the possibility of extending the Period of Significance for the property into the twentieth century. An investigation into Elsa Peterson's role on the farm was completed. Although Elsa's contribution to the farm was documented in Andrew Peterson's diaries, the Income and Expense Records that were continued by his children after his death mention her little. All the children received wages, except Oscar who was believed to have been developmentally disabled. There is no recording of Elsa receiving wages. This suggests that the Peterson children had a larger administrative role on the farm than Elsa after Andrew's death.

Furthermore, even though the farm appears to have been active through the lifetime of the children, the activites reflect a larger change in farming in Minnesota. The farm's rise in dairy production represents the pattern of diversification of many Minnesota farms and is therefore not significant in its own right. At the same time, records show that the production of apples decreased significantly after Andrew's death. Not only did production dwindle, but experimentation with various apple varieties appear to have stopped. Income and Expense Accounts left by Andrew's children show that the farm ceased apple sales entirely in 1913. Therefore, since the pattern of activity was similar to many other farms in Minnesota in the twentieth century, it does not seem that Elsa Peterson's or the Peterson children's activities justify extending the Period of Significance. For a more information about the farm in the twentieth century, please see the Appendix: *The Peterson Farm in the 20th Century.*

Identifying Contributing Resources

A critical step in determining the historic significance of the site, and subsequently making decisions on the treatment of the site, is identifying the contributing resources within the property. According to the National Register Bulletin 16: *How to Complete the National Register Registration Form,* in order to be considered a contributing resource, a building, site, structure, or object must "add to the historic associations, historic architectural qualities, or archaeological values for which a property is signficant," and:

- be "present during the period of signficance of the property,"
- "relate[s] to the documented signficance of the property," and
- "possess[es] historic integrity" or be "capable of yielding important information about the period," or "independently meet[s] the National Register criteria.

The historic resources that are identified as part of this historic structures report are labeled as either contributing or non-contributing in their individual sections in this document. Some of the resources are given a preliminary determination of "possible" contribution to the Historic District. This determination is made for resources that do not currently have the physical integrity to be considered contributing, but may in the future. For instance, a reconstructed building may qualify as contributing if the Reconstruction work is carried out according to the Secretary of the Interior's Standards for Reconstruction and if it has been determined to meet the guidelines for National Register Criteria Consideration "E" as stated in National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation*. A reconstructed resource is considered contributing under Criteria Consideration "E" when it is:

- "accurately executed in a suitable environment" and
- "presented in a dignified manner as part of a restoration master plan," and
- "when no other building or structure with the same associated has survived."

It is important to understand that not all reconstructed buildings meet these criteria and the status of each building's contribution cannot be made until after reconstruction has taken place. It is also important to reiterate that although some determinations are unable to be made at this time, the recommendations in this report reflect the best judgment for the overall master plan of the site. Reconstructions are recommended in this report when it is believed that their addition will provide a more historically accurate and complete depiction of the farmstead during Andrew Peterson's lifetime.

BASIS OF THE PHILOSOPHY OF TREATMENT

The philosophy for the treatment of the Andrew Peterson Farmstead is based on:

- the realistic, local opportunities and demands unique to this site,
- the guidelines described in the *Conservation Principles for the Sustainable Management of Historic Environment in Wales*, and
- the Secretary of the Interior's Standards for Restoration, Rehabilitation, and Reconstruction (depending on the building or feature).

The combination of these resources and demands helped to shape the ways in which the treatment recommendations found in this report are framed and how future changes at the site should be evaluated and executed.

Local Opportunities and Demands on the Site

The Andrew Peterson Farmstead offers many opportunities to share the significant contributions of Andrew Peterson specifically as well as the story of early Swedish immigrant life in Minnesota.

1. *Recommendations for the treatment of the Andrew Peterson Farmstead should support the interpretation of the farmstead as an educational resource.*
2. *Recommendations for the treatment of the Farmstead must protect the integrity of the existing historic resources remaining from the lifetime of Andrew Peterson.*
3. *Recommendations for the treatment of the Farmstead should support the ability of the Carver County Historical Society to mitigate the losses to the historic integrity of the Farmstead as a whole.*
4. *Recommendations for the treatment of the Farmstead must be mindful of the necessity of the Carver County Historical Society to generate revenue to sustain the financial demands of the site.*
5. *Recommendations for the treatment of the Farmstead must be thoughtful, prioritized, and phased to fit with available funding.*

Conservation Principles for the Sustainable Management of the Historic Environment in Wales

The *Conservation Principles* are a thoughtful approach to the management of change on the Andrew Peterson Farmstead. They can be universally applied to the physical work necessary to the site as well as programming and management. The full document is available as an appendix to the report with the core principles listed here:

1. *Historic assets will be managed to sustain their values.*
2. *Understanding the significance of historic assets is vital.*
3. *The historic environment is a shared resource.*
4. *Everyone will be able to participate in sustaining the historic environment.*
5. *Decisions about change must be reasonable, transparent, and consistent.*
6. *Documenting and learning from decisions is essential.*



Figure 19: Image from Laser Scan performed in 2017 showing aerial view of 1914 Barn, South Barn, Garage, and Farmhouse.

The Secretary of the Interior's Standards

The Secretary of the Interior outlines aspects of historic preservation standards from establishing the period of significance of a site to physical treatment. These standards are recognized as the foundation of historic preservation in the United States.

There are four treatment standards that can be applied to the physical work done to a building: Preservation, Restoration, Rehabilitation, and Reconstruction. While there are elements of all four standards within our recommendations in this report, the primary standards (and their definitions) applied to the structures and the farmstead as a whole are as follows:

1. **Restoration** *is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.*
2. **Rehabilitation** *is defined as the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values.*
3. **Reconstruction** *is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.*

Each of these treatment standards has guidelines, produced by the National Park Service and published on their website.

SELECTING THE APPROPRIATE TREATMENT - INTEGRITY

Selecting the appropriate treatment for the site as a whole, as well as each structure and element that makes up the site, depends on several factors. One of these factors is **integrity**.

Assessment of Integrity, By Rolf Anderson

The surviving buildings on the Peterson Farmstead retain a high level of integrity. These include the farmhouse, granary, north and south barns, and smokehouse, which were identified as contributing buildings in the National Register of Historic Places Nomination. (Please review the Smokehouse section of this report for a discussion of its status as contributing/non-contributing to the district.) Integrity is determined by evaluating a property against the seven aspects of integrity, including integrity of location, design, setting, materials, workmanship, feeling, and association.

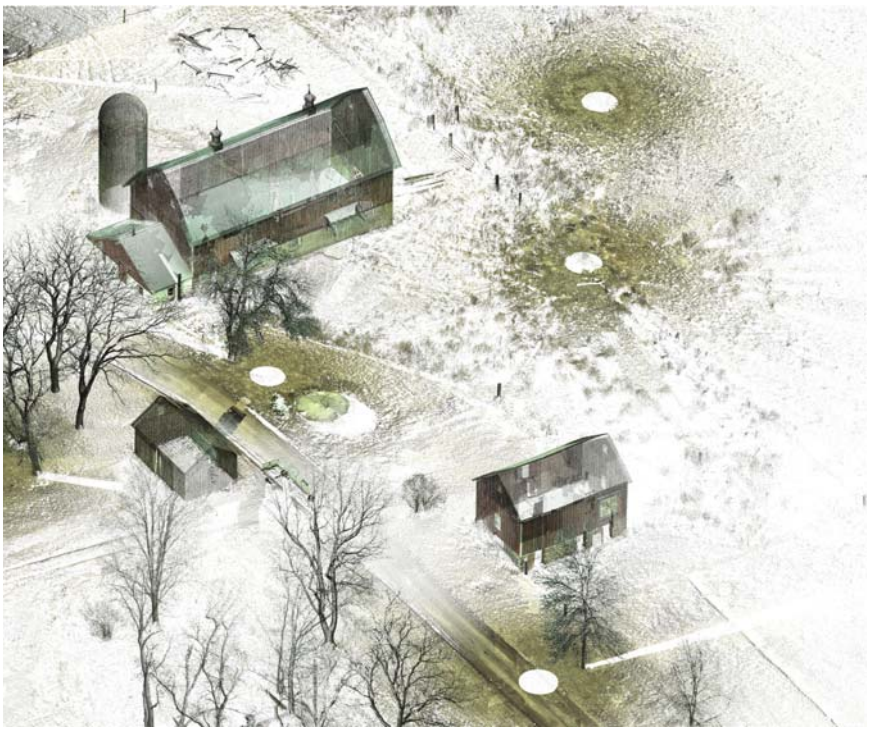


Figure 20: Image from Laser Scan performed in 2017 showing aerial view of 1914 Barn and Silo, the Granary, and the South Barn.

The farm experienced a loss of integrity when the majority of its 160 acres were sold, reducing the current farmstead to 12.17 acres. However, the farmstead continues to reside in a rural, largely agricultural area, which helps to retain integrity of setting, feeling, and association. Yet, if original lands could be returned to the farm, the integrity of the property would be increased.

The farm also experienced a loss of integrity with the removal of buildings constructed during the period of significance. The period of significance is defined as the time during which the property attained significance; or the time during which the property was associated with important events, patterns, activities, or persons; or the time the property attained important physical characteristics. The National Register Nomination defined the period of significance within the date range of 1800-1899. Based on current National Register practices, a precise period of significance must be defined. Because the farm is significant because of its association with Andrew Peterson, and activities during his lifetime, the appropriate period of significance is 1855-1898, encompassing the date he purchased the farm and extending until his death.

It is not unexpected that certain farm buildings may be removed over the years. Small-scale buildings in particular are most likely to be removed. However, based on the unprecedented documentation about the Peterson Farm, a rare opportunity exists to reconstruct or restore certain farm buildings or features, which would increase the integrity of the property. This would also provide the opportunity to increase the depth of interpretation at the farmstead and in a remarkably authentic manner, based on activities that actually occurred at the farm, versus interpreting activities that might have been expected to have taken place on a typical farm.

When considering which buildings or features to restore, historians Susan Granger and Scott Kelly in their work, "Historic Context Study of Minnesota Farms, 1820-1960," discuss how farm elements may be divided into four categories: domestic elements, animal husbandry elements, crop husbandry elements, and service and utility elements. Domestic elements may include farmhouses, worker's housing, vegetable gardens, lawns and ornamental plantings, and summer kitchens. Animal husbandry elements may include all the various types of barns such as beef barns, dairy barns, horse barns, sheep barns, hog barns, poultry houses, smokehouses, as well as fences and certain

fields and pastures. Crop husbandry elements may include corncribs, granaries, hay barns, root cellars, orchards, as well as certain fields and pastures and field rock piles. Service and utility elements may include cisterns, farmyards, farm shops, icehouses, privies, roads, water tanks, wells, windmills, and woodsheds. Ideally, elements from each category should be represented on the farm in order to present a comprehensive depiction of the farm and a more complete interpretation of the activities on the farm. In fact, the National Register Nomination notes that one important element missing from the farm is the orchard. Based on Peterson's significant contributions to horticulture, the restoration of the orchard would result in the return of one of the farm's most important elements.

A property may also lose integrity when changes are made after the period of significance. In their guidelines for evaluating historic farms, historians Susan Granger and Scott Kelly note that new elements, alterations, or additions should be small in number, modest in scale, and should not obscure the property's historic design characteristics or historic interrelationships.



Figure 21: Image from Laser Scan performed in 2017 showing the Farmhouse, sheds on the neighboring property, the 1914 Barn and Silo, and the South Barn. View facing northeast.

SELECTING THE APPROPRIATE TREATMENT - STRATEGIES

As a site listed in the National Register of Historic Places, and as a Carver County historical site, it is important that any work done to the Andrew Peterson Farmstead is carefully considered. The Secretary of the Interior provides four treatment standards that apply to changes made to historic buildings and sites. These treatments include Preservation, Restoration, Rehabilitation, and Reconstruction. The recommendations provided in this report are based on these treatment standards, and have been tailored according to the physical condition of the site and to complement the goals of the Carver County Historical Society.

In the case of the Andrew Peterson Farmstead, the site and its individual features must be considered both as part of a whole, and as a unique part of the larger story. The configuration and scale of the groups of small outbuildings is a critical part of the interpretation of the site as a working farm. Therefore, one overall treatment strategy is recommended for the site, and then recommendations for work to individual buildings are provided in order for them to fit into the larger picture.

Restoration is the recommended treatment strategy for the Andrew Peterson Farmstead site. The National Park Service defines restoration as, "the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and



Figure 22: Image from Laser Scan performed in 2017 showing the Farmhouse. View facing north.

reconstruction of missing features from the restoration period."[35]

The period of significance for the site, and the general time period for restoration is 1855-1898. This period is significant because Andrew Peterson claimed the land in 1855 and he died at the farm in 1898. It is important to note that more specific and nuanced target dates for restoration of individual buildings or features have been selected. These dates will be explained in the individual treatment discussions for each building in later sections of the report.

In order to accomplish a true restoration of the site, **reconstruction** of missing features that existed during the restoration time period is necessary. The National Park Service defines reconstruction as, "the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location."[36]

35 Anne E. Grimmer and Kay D. Weeks, "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings," 3, revised by Anne E. Grimmer, U.S. Department of the Interior, National Park Service Technical Preservation Services, Washington, D.C., 2017. https://www.nps.gov/tps/standards/treatment-guidelines-2017.pdf.

36 Ibid.



Figure 23: Image from Laser Scan performed in 2017 showing aerial view of property. Highway 5 and Parley Lake Road are visible.

While not all buildings and features lost over the years are recommended for reconstruction in this report, the ones selected and discussed are all crucial to the accurate interpretation of the farmstead during Andrew Peterson's lifetime. Many of the buildings that existed during the period of significance of the site have sufficient documentation to support reconstruction.

For some of the buildings on the farmstead to function, **rehabilitation** work is necessary. Rehabilitation is defined by the National Park Service as, "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."[37] Rehabilitation is applied as a treatment strategy in this report to structures that the Carver County Historical Society has identified to house a new use. There are some instances where the authors of this report recommend limiting the scope of rehabilitation in order to protect significant or fragile features of a building or the site. Those recommendations are found in each building section of this report. It is recommended that as much historic fabric remain as possible in every building or feature. It is also recommended that efforts be made for new uses to be sympathetic to the historic buildings and the site. Limited upgrading of mechanical, electrical, and plumbing systems and adaptations to compy with building codes can be undertaken to ensure the building remains useful, however, they should be concealed in walls or hidden from view when possible.

Preservation is not recommended as a treatment for any building on this site, but it is important that this treatment standard is well-understood for the ongoing maintenance of the buildings. The National Park Service defines preservation as, "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction."[38]

It is also vital to understand that historic sites change over time, and the recommendations in this document will not be applicable forever. As the conditions of the farmstead and the Carver County Historical

37 Ibid, 2.

38 Ibid.

Society's goals change, the recommendations would also change. It is recommended that decisions continue to be informed by the Secretary of the Interior's Standards and the treatment philosophy outlined in this report. It is also recommended that CCHS and its consultants remain in contact with the State Historic Preservation Office during planning and design.

HISTORIC PRESERVATION TREATMENT PHILOSOPHY

The combination of the resources, opportunities, demands, and standards outlined in this report led to the treatment philosophy below. These are listed in order of priority of work.

1. For existing buildings that are contributing resources to the historic district –
    a. The exteriors of these buildings will be restored to the period of significance.
    b. The interiors of these buildings will be either restored to the period of significance or rehabilitated with a sympathetic new use in a manner congruent with the Secretary of the Interior's Standards.
2. For existing buildings that are non-contributing resources to the historic district –
    a. The treatment for these buildings should be assessed on a case-by-case basis.
3. If insufficient evidence is available to determine if an existing resource is from the period of significance, then it should remain on-site until a reasonable determination of its construction date can be made.
4. For new construction of buildings and site amenities (such as parking lots and picnic facilities) –
    a. The siting of these buildings and features will not be within the primary farmyard area, preferably also outside of the viewshed from the farmyard.
    b. The design of these buildings and features will not portray a false sense of history and the scale of the buildings should be sympathetic to the historic buildings and patterns of development of the farmstead during the period of significance.
5. For buildings that have been identified as part of the farmstead during the period of significance but no longer exist –
    a. The exteriors of these buildings may be reconstructed if sufficient documentation can be identified.
    b. The interiors of these buildings will be either reconstructed (if sufficient evidence is available) or not open to the public.



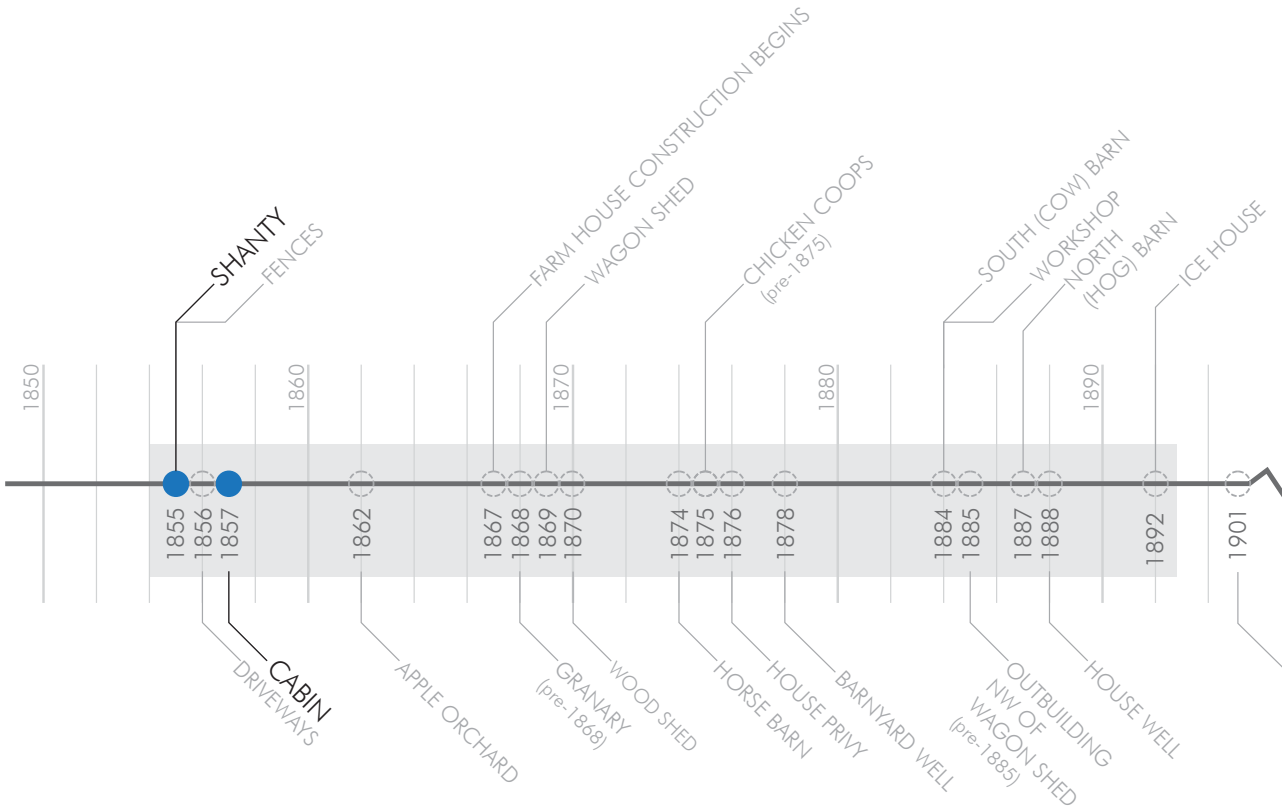
INDIVIDUAL BUILDINGS AND FEATURES

PURPOSE AND SCOPE

This section of the report serves to describe the structures on the Andrew Peterson Farmstead. While the focus of this study is on the existing structures, their condition, and recommended treatment, the missing structures provide critical context for interpreting the site as a whole. For that reason, many of the site features and buildings that are described by Andrew Peterson in his diaries and buildings that appear in photographs from Andrew Peterson's lifetime are included in this section as well.

This portion of the report is broken into sections by building, listed chronologically according to the start of construction for that building or feature. Each section includes a brief history and description of the use of the structure, a physical description, and the existing condition. This section of the report also contains recommendations for the future treatment of the existing buildings on site.

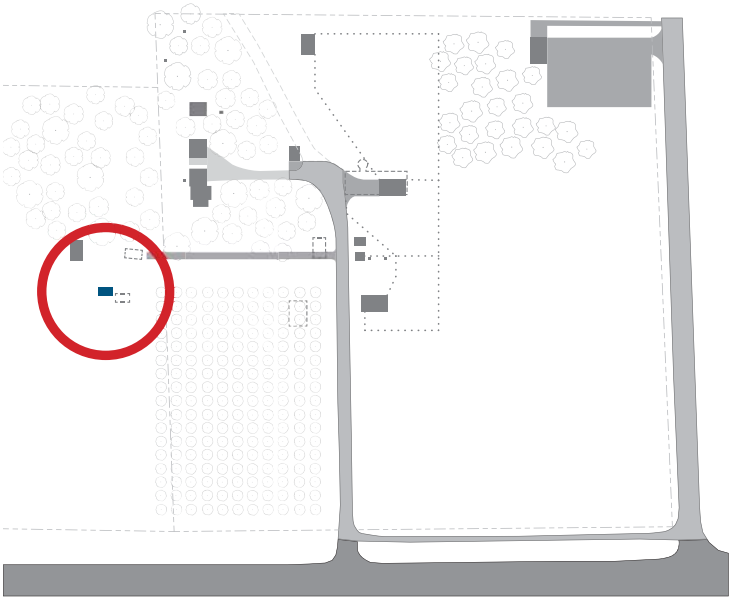



1850
1860
1870
1880
1890
1855
1856
1857
1862
1867
1868
1869
1870
1874
1875
1876
1878
1884
1885
1887
1888
1892
1901
SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

EARLY RESIDENCES



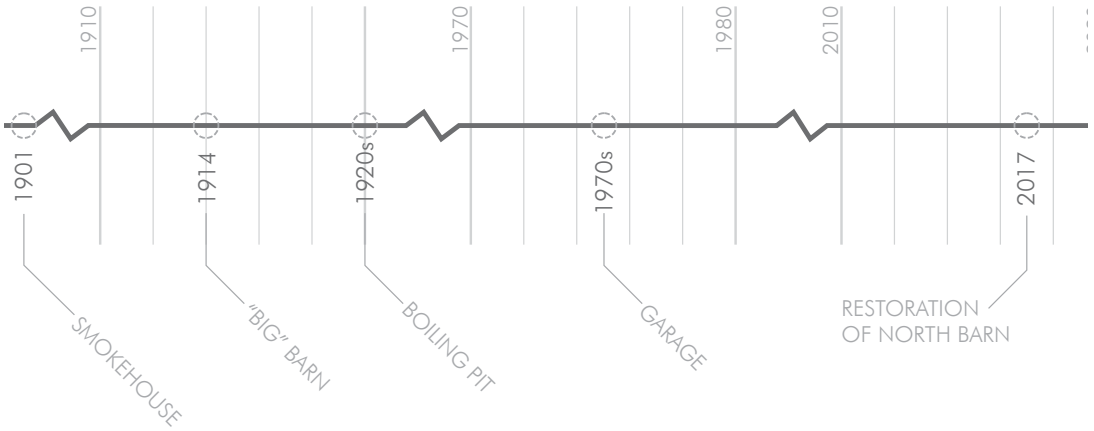
"From morning until three in the afternoon, Peter Fisher and I hauled the rest of the timbers to the place for the shanty."
-July 2, 1855



Site Plan indicating location of Early log residence (no scale)



Figure 24: Early log residence, May 4, 1885.



SHANTY, 1855
CABIN, 1857

Condition: Not existing
Contributing to Historic District: Possible if reconstructed

Historical Context For Log Construction

By Rolf Anderson

Peterson's use of log construction in his three farmhouses followed the broader patterns that were typical in pioneer settlements. In addition, he also followed these same patterns when he chose to side his house with wood siding.

By the time Europeans began to settle in North America, there had been a long tradition of log construction for houses, barns, and other outbuildings in the Scandinavian countries as well as in Finland, Germany and Northern Russia. These regions had vast stands of softwood timber that could be easily worked using simple hand tools. Both the Finns and Swedes had well-developed forest industries and the Finns, in particular, had become accomplished in building several forms of log housing.

When the Finns and Swedes began to arrive in New Sweden, along the banks of the Delaware River in present day Delaware, Maryland, New Jersey, and Pennsylvania, they brought their knowledge of wood construction with them, as did later immigrants from Germany. Other immigrant groups with no tradition of building with logs quickly adopted the technique.

A log cabin was an ideal building type for settlers and pioneers. Not only was log construction cost effective, but it would have been difficult to transport building materials over long distances to a building site located in a remote area. In addition, a log cabin was relatively easy to build. It was estimated that several workers could cut down trees, trim them, drag the logs to the building site, notch the logs, and construct a one-room cabin with a chimney and fireplace in a matter of days. Plus a log cabin did not require nails or spikes to hold the logs together. Thus, wherever there were forested areas, the log cabin became the preferred initial dwelling.

A distinction should be made between the traditional meaning of a "log cabin" and a "log house." "Log cabin" generally refers to a simple one,

or one-and-one-half story building, somewhat impermanent, and less finished or less architecturally sophisticated. A "log cabin" was usually constructed with round rather than hewn or hand-worked logs, and it was the first-generation homestead erected quickly for frontier shelter. "Log house" historically refers to a more permanent, hewn-log dwelling, either one or two stories, of more complex design, and often built as a second-generation replacement.

It was not uncommon to cover exterior logs with some type of cladding. The walls were covered for both aesthetic and practical reasons as soon as the building was completed or sometime later. Sometimes exterior walls were whitewashed, but usually a more permanent covering such as wood siding or stucco was applied to the walls, which provided better insulation and protection, and eliminated the maintenance required for log walls. Vertical wood furring strips were usually nailed to the logs prior to applying the siding or stucco. This ensured that the walls would be plumb and provided a base on which to attach the clapboards, or on which to nail the wood lath for stucco.

Similarly, interior log walls in more finished houses were commonly covered for many of the same reasons that the exterior logs were covered—improved insulation, ease of maintenance, aesthetics, and keeping out vermin. Interior walls might be covered with planks, lath and plaster, or even fabric or wallpaper, which increased their resistance to air infiltration and concealed the rough log construction. In addition, finished walls could be cleaned and painted more easily and allowed for the installation of wood trim and other decorative features.

But as the frontier disappeared, so would the log cabin as a building type. As sawmills were developed and lumber became available, frame construction made the log cabin obsolete.[39] In Minnesota, notably in the northern part of the state with its vast timber resources, log construction continued beyond the homestead era into the modern day, but the log cabin was typically built for recreational purposes rather than as a primary residence.

39 "The Preservation and Repair of Historic Log Buildings," Preservation Brief 26, Technical Preservation Services, National Park Service, U.S. Department of the Interior, https://www.nps.gov/tps/how-to-preserve/briefs/26-log-buildings.htm. "Log Cabins in America: The Finnish Experience," National Park Service, U.S. Department of the Interior, https://www.nps.gov/nr/twhp/wwwlps/lessons/4logcabins/4logcabins.htm.



Figure 25: Early log residence, May 4, 1885.

PHYSICAL DESCRIPTION

The Shanty was the first structure Andrew Peterson constructed on his farmstead. He built this first home and moved into it within five months.[40] He lived in this home for about two years before he started building his second home, referred to in his diary as the Cabin.[41]

Description Based on Andrew Peterson's Diaries

Descriptions from Andrew Peterson's diary confirm that his first residence on the farmstead, called the Shanty, was constructed almost entirely out of logs and tree bark. The walls of the log structure were chinked with mud. The roof was likely clad with bark, although he refers to both shingles" and "bark" in his diary entry.[42] The Shanty had one door[43]

40 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, June 1855-November 1855.

41 Ibid, August 1857.

42 Ibid, June 1855-November 1855.

43 Ibid, July 1855.

and at least one window.[44] The interior was finished with boards for the ceiling[45], wainscot[46] on the walls, as well as a shelf[47] and moulding[48] for the plank[49] door. He further describes a chimney, although not specifically the material or type.

The diary also describes many aspects of the Cabin.[50] The Cabin was a one-story log structure with a cellar.[51] The walls were made weather-tight by chinking between the logs.[52] While Andrew Peterson wrote of going into the woods to harvest an oak tree from which to make shingles for the Cabin roof, in later diary entries he refers to using elm bark for the roof.[53] The Cabin also had at least two windows.[54] While the exterior logs were exposed, a diary entry mentions that wood panels were installed on the interior.[55] The diary also mentions that lath was put on the ceiling.[56] In December of 1858, one diary entry reads, "Sawed off the corner of my house and hauled wood."[57]

The Cabin received maintenance, often annually. This generally included daubing the exterior and interior of the structure. By 1871, the diary entries refer to "whitewashing" and "plastering" the structure rather than "daubing" and "chinking" it.[58] The Cabin was moved to a location to the north of the workshop in 1886.[59]

44 Ibid, October 1855.

45 Ibid, October 4, 1855.

46 Ibid, December 12, 1855.

47 Ibid.

48 Ibid, January 9, 1856.

49 Ibid, October 6, 1855.

50 Ibid, August 1857- April 1886.

51 Ibid, August 6, 1857.

52 Ibid, October 27, 1857.

53 Ibid, May 1858; Ibid, June 21, 1875.

54 Ibid, July 5, 1860.

55 Ibid, September 9, 1858.

56 Ibid, May 28, 1858.

57 Ibid, December 7, 1858.

58 Ibid, December 12, 1872.

59 Ibid, March 31, 1886.

Description Based on the Photograph of an Early Residence

An early log structure appears in the photographs of the farmstead taken in 1885. By this time, if the structure in the photograph is either the Shanty or the Cabin, it would be 30 or 32 years old respectively.

The 1885 photographs of the Andrew Peterson farmstead contain key visual information about the structure. The logs used to construct the structure are rounded, not hewn square, and several have remnants of bark left on them. There is chinking between the logs. At the northwest corner of the structure, the log ends have been sawed off, exposing the saddle notched logs. Of the typical log structure joints, the saddle notch is relatively quick and simple.[60]

The 1885 photographs also show the bark was held down with thin wood poles that ran across the roof. Those poles were supported by other wood poles that were attached vertically to the exterior of the log walls.

There were two openings on the south side of the cabin. The southwest opening was a door and the southeast was a window. Both openings were trimmed with wood. There were no openings in the west wall. The photographs from 1885 only show the south and west facades.

EXISTING CONDITION

Neither the Shanty, nor the Cabin currently exist on the site.

60 Lena Ason-Palmqvist, Building Traditions Among Swedish Settlers in Rural Minnesota (Uddevalla: The Nordiska Museet/ The Emigrant Institute, 1983), 40.

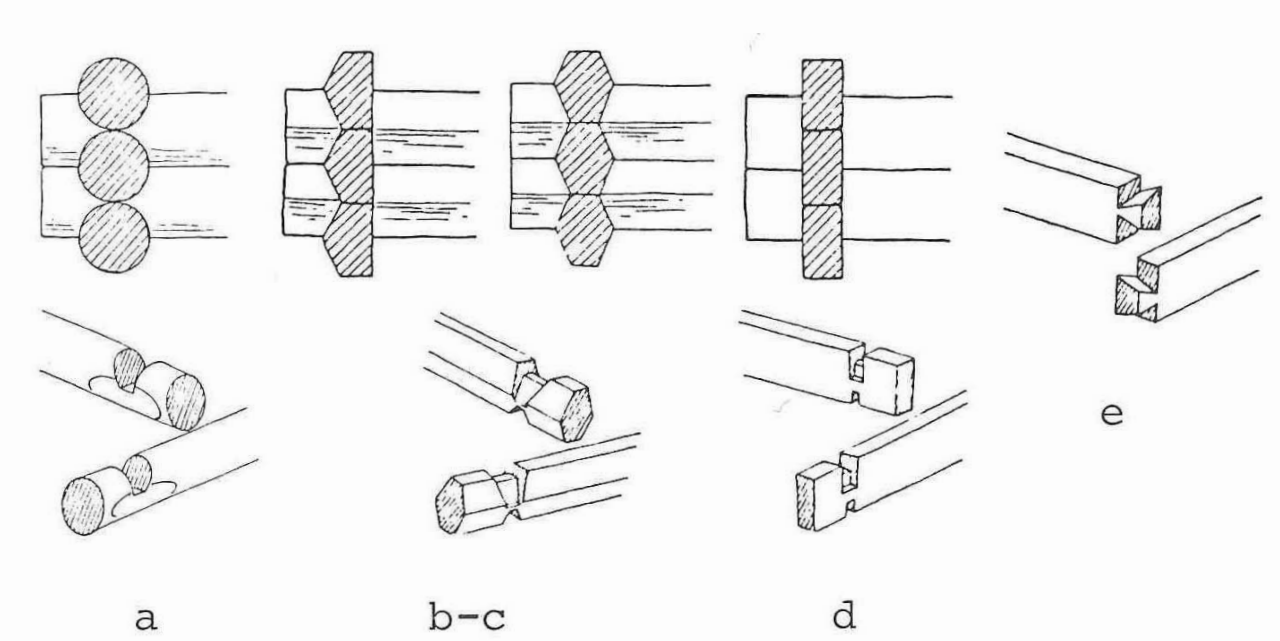
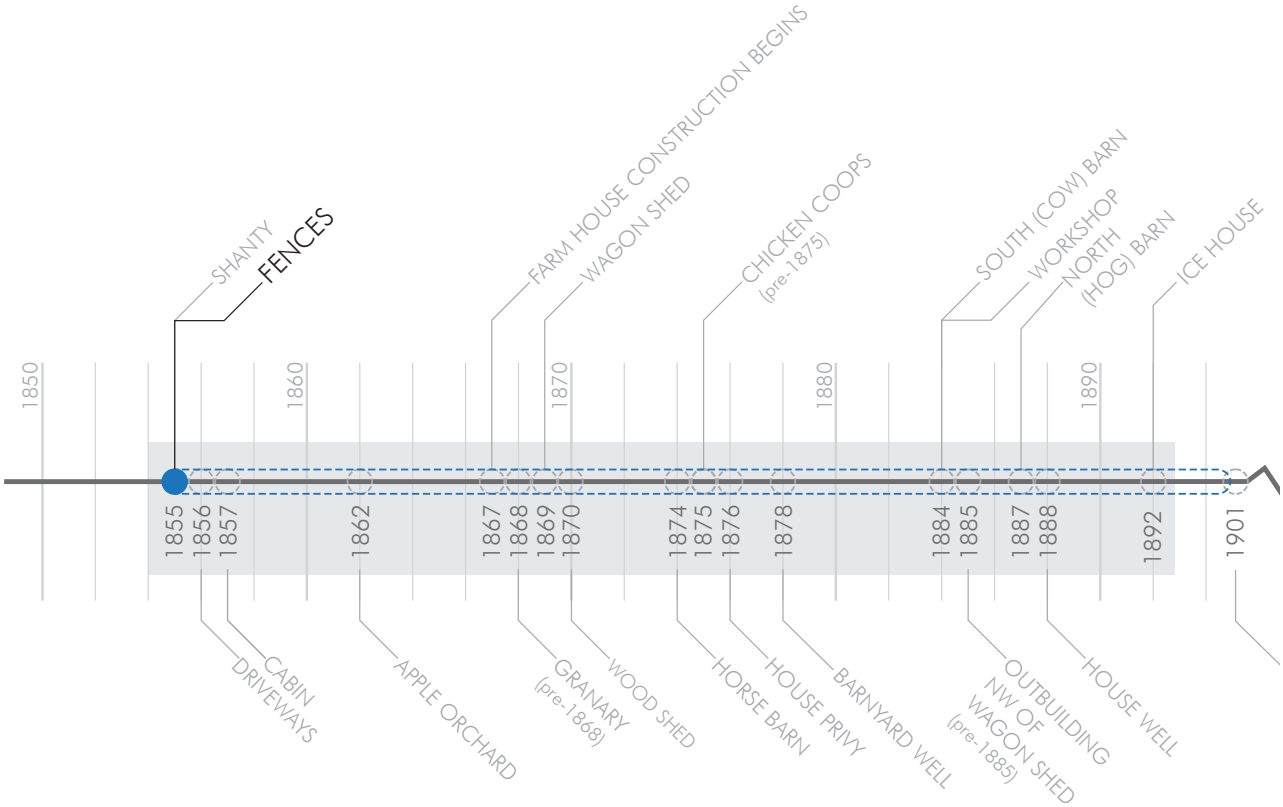
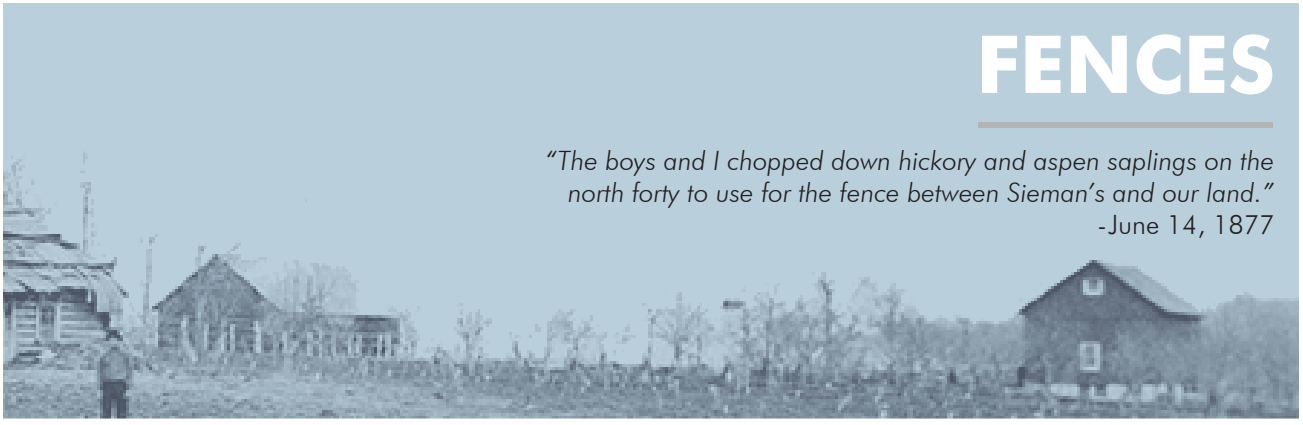


Figure 26: Typical wood construction details, a: round-timber with a saddle notch, b: pentagonal timber, c: hexagonal timber, d: square-hewn logs with a more "sophisticated" joining technique, e: dovetail construction. From Building Traditions Among Swedish Settlers in Rural Minnesota *by Lena A:son-Palmqvist, 1983.*

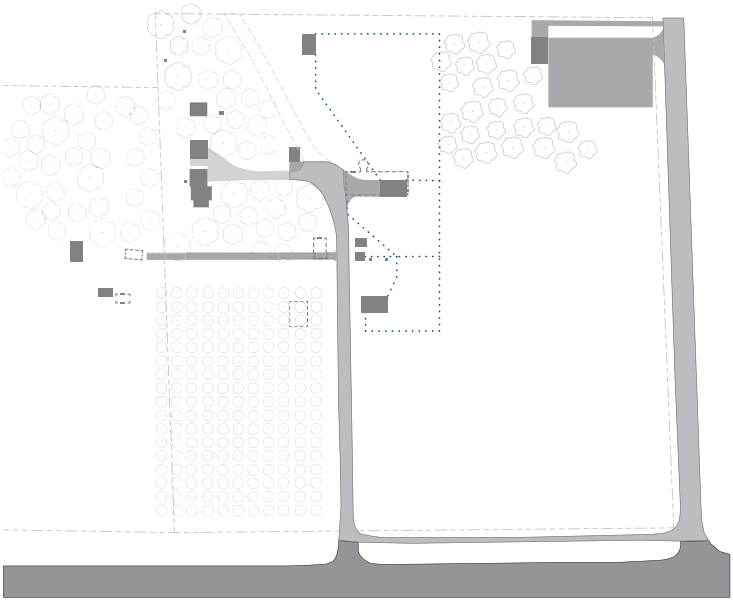



SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH
(HOG) BARN
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1901
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

FENCES



"The boys and I chopped down hickory and aspen saplings on the north forty to use for the fence between Sieman's and our land."
-June 14, 1877



Site Plan (no scale)



Figure 27: 1885 photograph cropped to show fences.

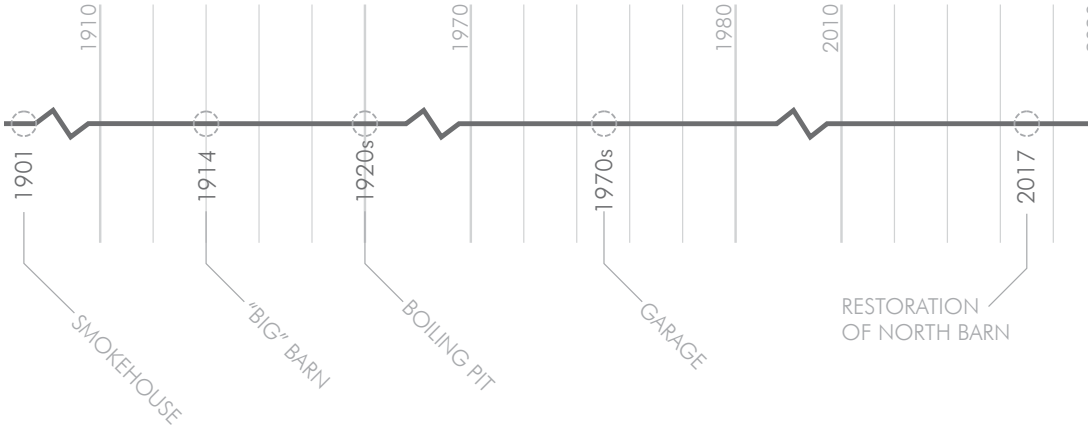




Figure 28: 1885 photograph cropped to show fences.

FENCES, 1855-1898

Condition: Original not existing
Contributing to Historic District: No

Andrew Peterson constructed fences on the property soon after he claimed the land.[61] It is recommended that fences be reconstructed in the locations, materials, and forms described in Andrew Peterson's Diary, and as evidenced in historic photographs.

Historical Context For Fences

By Rolf Anderson

Farmers put up fences to mark the boundaries of their property and subdivide their land, but especially to manage livestock by keeping them out of gardens and cultivated fields, off railroad tracks, within stockyards, and in pastures and harvested fields where they could forage.

61 Andrew Peterson, *The Diary of Andrew Peterson 1855-1898*, September 1855.

Fences in Minnesota are especially linked to diversification in agriculture in the late 19th century when farmers implemented a more sustainable mix of livestock and crops. Fences were a major capital investment that could create new economic opportunity, just like a barn or other outbuildings. As early as the 1890s, farmers were urged to see fences not as an expense but rather as a means of increasing profits.

In the early settlement era, fences were made with materials available on the farm, such as brush and stumps, or posts and rails. Later, farmers installed barbed wire and woven wire fences. The type of fence was determined by the kind of livestock that was being confined.[62]



Figure 29: Drawing of a Stake and Rider fence from the book, Old-Time Gates and Fences and How to Build Them edited by George Martin.

PHYSICAL DESCRIPTION

Although there are no historic fences remaining, the diary provides some general information about the materials and construction of the fences and gates on the farmstead. In his diary, Andrew Peterson mentioned harvesting and using aspen, hickory, butternut, and ash for making fence posts.[63] Andrew Peterson wrote about painting the gates with oil paint.[64] Andrew Peterson also mentioned using nails from Chaska in fence construction starting in 1877,[65] and using wire fences starting in 1882.[66]

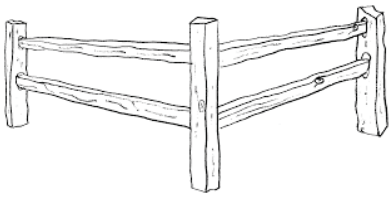


Figure 30: Line drawing of a split rail fence, image source: http://themantelguy.blogspot.com200906splitrail-fence-drawing.html

The only specification for a fence that Peterson mentioned in the diary is as follows:

> *"the fence is to have a four inch space between the splices to the height of 2 ft., thence there is to be a six inch space between the splices to the height of 5 ft. also stakes and riders."*
>
> -June 12, 1858

Andrew Peterson put up many fences around buildings, animals, and other areas. He referenced enclosing: the cow yard, ox yard, around the haystacks, yard for the geese between the cow yards, around the pig pen, barnyard fence by the road, fence by the east end of the barn, fence around the orchard, between the west meadow and the south field, by the well, by the corn crib, around the new pig barn, between

62 Granger, 6.191-6.202.

63 Ibid, June 7, 1877; Ibid, June 14, 1877; Ibid March 10, 1880; Ibid, May 27, 1882.

64 Ibid, October 10, 1888.

65 Ibid, June 18, 1877.

66 Ibid, August 2, 1882.

the high road and the home field, between the west meadow and the field, and around the sheep yard.[67]

Andrew Peterson and his neighbors also put up fences between their properties. The diary mentions fencing between the Peterson farmstead and these properties: Freed's, Andrew Schran's south of his south forty, along the public road from to Seiman's farm across the north forty, Nicholas', Peterman's to east of the farmstead, and Swenson's properties to west of property.[68]

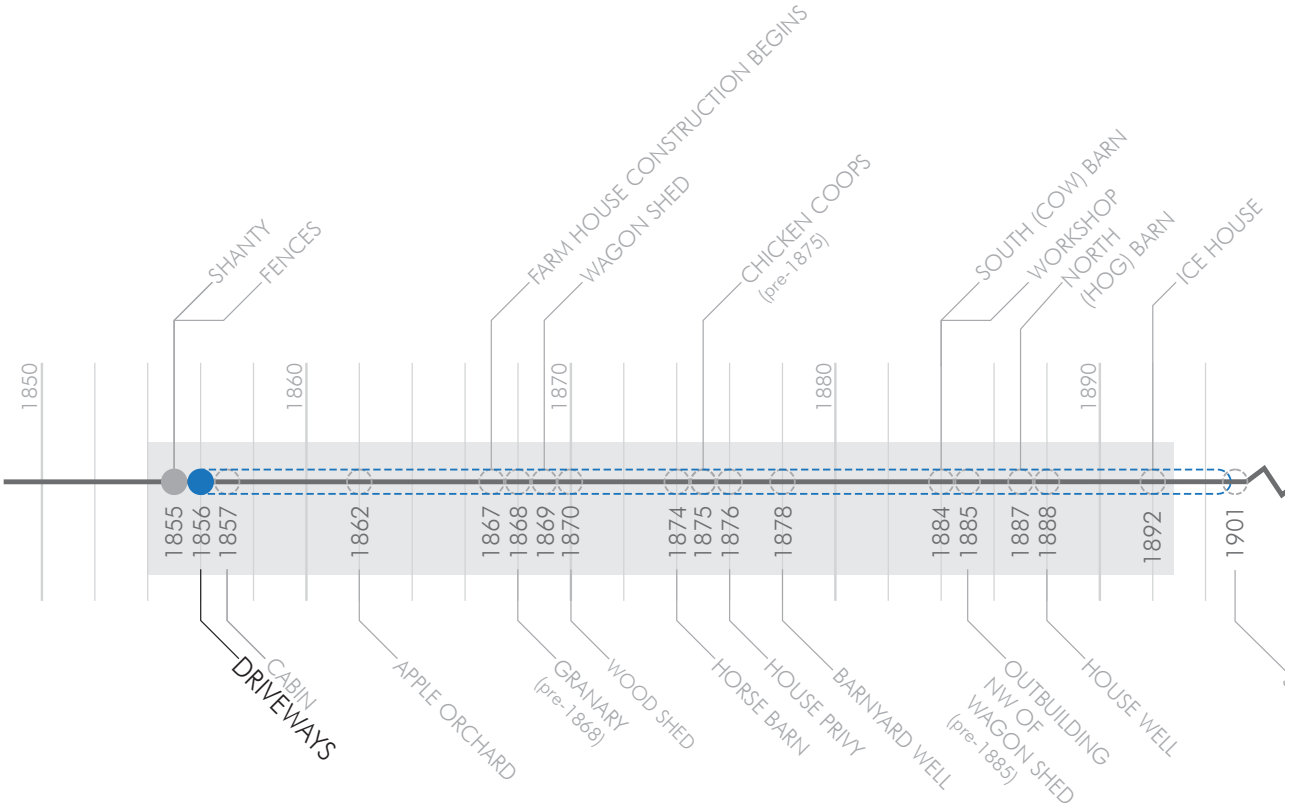
EXISTING CONDITION

There are no historic fences existing on the property. Fences existing on the farmstead have been constructed in new configurations and with modern materials and methods.

67 Ibid, September 20,1885; Ibid, November 7, 1861; Ibid, July 30, 1862; Ibid, November 20, 1862; Ibid, November 13, 1873; Ibid, April 7-13, 1875; Ibid, May 31, 1876; Ibid, November 14, 1876; Ibid, July 31, 1888; Ibid, November 16-23, 1888; Ibid, April 12, 1889; Ibid, November 8, 1897.

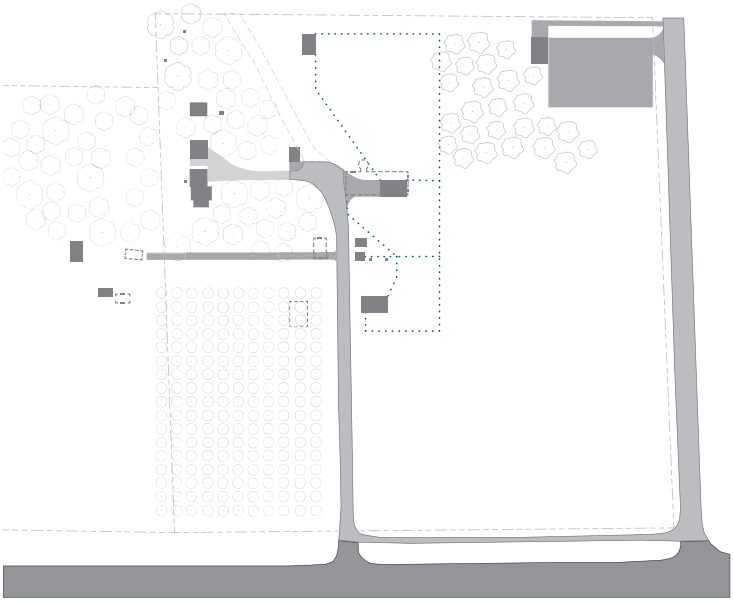
68 Ibid, June 3, 1876; Ibid, November 20, 1882; Ibid, April 23, 1883; Ibid, November 11, 1884; Ibid, August 25, 1885; Ibid, June 2, 1893.




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SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
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(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

DRIVEWAYS





Site Plan (no scale)



Figure 31: Aerial view taken August 19, 1937, courtesy of Borchert Map Library, http://geo.lib.umn.edu/Carver/y1937/WM-19-1719.jpg.

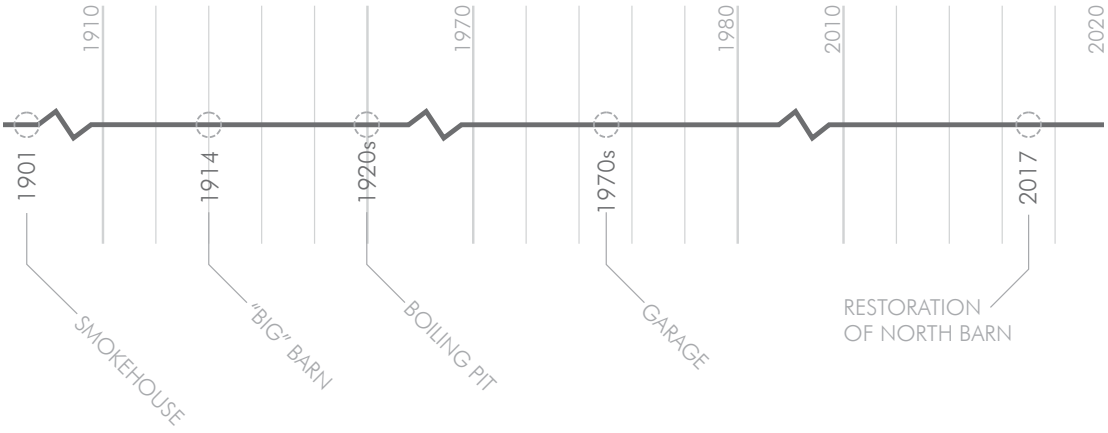




Figure 32: Image of driveway looking east towards 1914 barn, taken in 1969. The workshop is to the left of the image.

DRIVEWAYS, 1856-1898

Condition: Existing, but altered
Proposed treatment: Restoration
Contributing to Historic District: Yes (Portion of driveway between Highway 5 and North Barn)

Andrew Peterson worked on driveways and roads starting almost as soon as he claimed the land and continued to maintain and alter the paths up until the end of his life.[69]

Historical Context For Driveways, Roads, and Livestock Tracks

By Rolf Anderson

A farm's circulation system included a driveway, roads, and livestock tracks that facilitated the efficient movement of people, machinery, and farm animals. The main entrance driveway usually served both the farmhouse and the farmyard. It had to be wide enough to accommodate farm vehicles and was usually sloped to reduce snow drifting. In order to be serviceable all year around, it needed a gravel or hard surface. The preferred entrance driveway approached the house from one side and continued to the rear. The main drive usually branched off to the farmyard, which served the barns, stockyards, grain and feed storage buildings, and other work areas.

The private routes within the farm were usually called roads, lanes, or cartways. The distinction typically depended on their width and level of improvement. Lanes or cartways were often narrow, unimproved routes that led between buildings, led from the farmstead to the fields and pastures, and connected fields and pastures to one another. They were sometimes improved with small bridges or other built structures, in which case they might be

69 Ibid, various dates.

called roads. Farmers tried to arrange their fields and pastures in order to minimize the amount of land that had to be sacrificed to unproductive roads and lanes.

Livestock tracks or "cow paths" were narrow, worn paths made by animals, often walking single-file. Dairy cows, for example, often walked in well-worn tracks between pastures and the dairy barn.[70]

Andrew Peterson worked on developing and maintaining the farm's circulation system starting almost as soon as he claimed the land. His work is documented in numerous diary entries. In an early diary entry from December 1, 1856, Peterson stated, "In the afternoon I made a road to my field." In a later entry dated June 7, 1895, he stated, "Axel and Frank worked on the road with the team."

PHYSICAL DESCRIPTION

The Andrew Peterson Farmstead can be accessed from a gravel driveway off Highway 5 (Island View Road). This primary driveway continues straight and runs north/south to the 1914 Big Barn and then turns west and breaks off into two paths. One path goes directly west and ends at the Farmhouse and garage. The other continues at a diagonal toward the northwest and allows access to the adjacent property to the north.

There is also a small dirt path that runs parallel to Highway 5 between the main driveway and Parley Lake Road.

EXISTING CONDITIONS

The gravel on the main driveway is very thin and the portion that branches off towards the house has almost no gravel. However, the dirt is fairly flat and even. The small path parallel to Highway 5 is almost invisible in the landscape and is lower than the level of the road.



Figure 33: 2017 image of main driveway looking south towards Island View Road.



Figure 34: 2017 image of driveway to House/Garage looking east towards 1914 Barn.

70 Granger, 6.405-6.407.

TREATMENT RECOMMENDATIONS

It is recommended that a Cultural Landscape Report of the farmstead be completed in order to produce a comprehensive plan for the driveways and paths on the site. These recommendations are offered for preliminary planning purposes.

It is recommended that the gravel driveway off Minnesota Highway 5 (Island View Road) which leads to the 1914 Barn and turns west towards the house and garage be maintained. This road is vital to the site's configuration and organization, and is therefore vital to the interpretation of the site as it existed during Andrew Peterson's lifetime. However, the portion of the driveway that leads to the house should be altered slightly. The original path did not lead to the house, it only led to the wagon shed. Therefore, the driveway should be narrowed slightly and should be focused to serve the area to the north of the house, to the area where the garage now stands.

Terminating the diagonal portion of the drive leading from the 1914 Barn to the property to the north is recommended. This path did not exist during Andrew Peterson's lifetime, and in fact, did not exist until sometime after 1960. This portion of the driveway does not appear on the photographs available from the Minnesota Historical Aerial Photograph Online collection hosted by the University of Minnesota.[71] It would therefore create a false sense of history if it remained. To accomplish the termination of this portion of the drive, it is suggested the gravel be removed, the soil be regraded, and historically appropriate vegetation be planted in this area.

Since termination of this portion of the driveway will mean cutting off the access to the property to the north, it is recommended that a new driveway off Parley Lake Road be constructed on the Andrew Peterson Farmstead property. This new driveway could begin just to the north of the oil pipeline easement and travel parallel to the pipeline to the northwest until it meets the property line. It is possible for it to then turn and run parallel to the property line and to the west, until it can meet up with the existing driveway on the property to the north. Rerouting access to the property to the north will enable the heart of the historic farmstead to be undisturbed. The new driveway off Parley Lake Road also has the potential to provide access to a new parking lot and a new visitor's center building on the northeast section of the property. The path of the

71 "Minnesota Historical Aerial Photographs Online," last modified February 16, 2015, https://www.lib.umn.edu/apps/mhapo/.

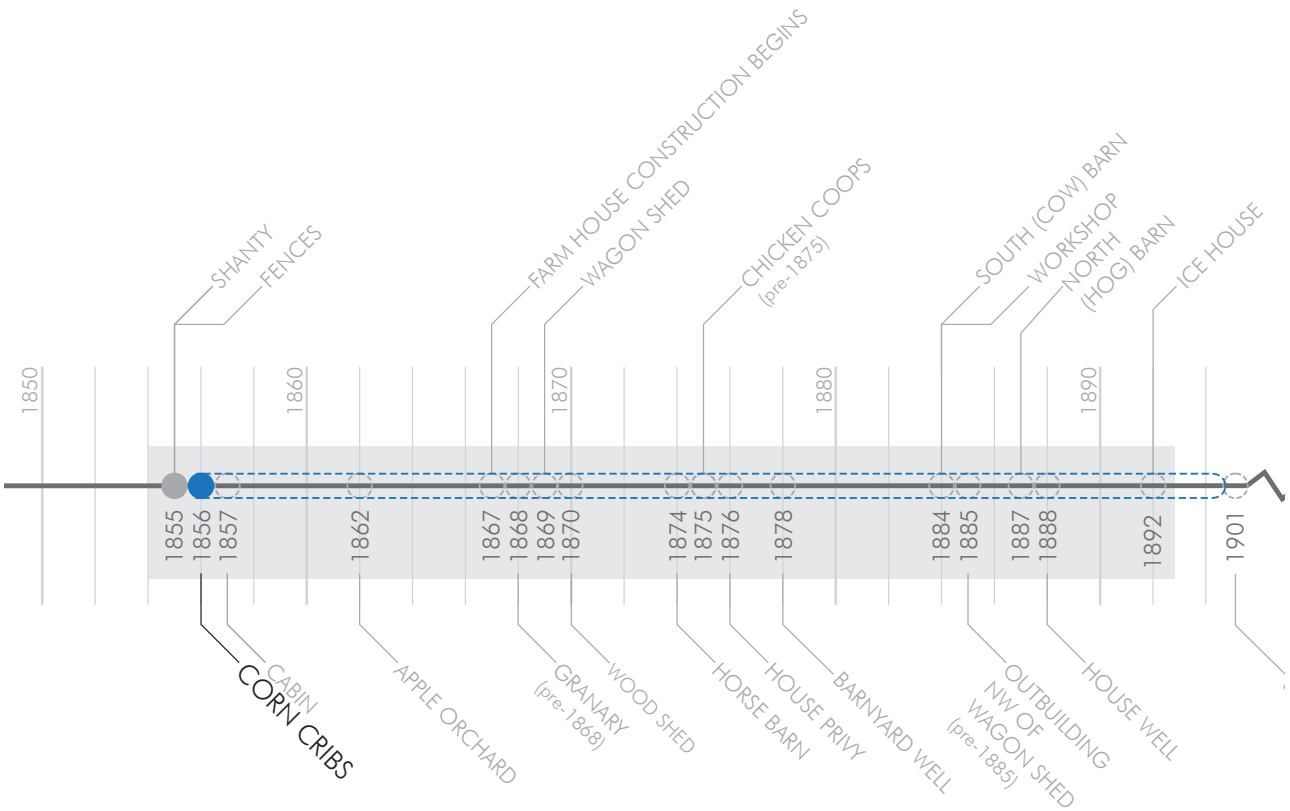
potential new driveway is diagrammed on "The Restored Site Plan" in the Executive Summary. An area has also been highlighted on this plan to show a region appropriate for new construction.

Although maintaining the original driveway to the house is recommended, it is not recommended that it be used by visitors for direct access to the site. Access directly from Highway 5 has the potential to pose traffic issues. Additionally, the amount of traffic expected after the completion of the farm's restoration would make it difficult to maintain and onsite parking accessed via that driveway would be insufficient and disruptive to the interpretation of the site. The presence of cars would also interfere with the visitors' experience of the scale and configuration of the site.

To discourage visitors from driving up the gravel driveway off Minnesota Highway 5, it is recommended that an 1885-period wagon be parked at the end of the driveway, blocking it from use. Since the experience of the approach to the historic farmstead is important in order to understand how Andrew Peterson and his family used the site, it is recommended that this strong organizing feature be incorporated into guided tours. For example, a tour could begin at the end of the drive, taking in the view of the landscape, interacting with the late 19th-century wagon, and then walking up the drive to experience the approach to the site that the Peterson family and their visitors would have experienced during Andrew Peterson's lifetime. Another alternative to parking a wagon at the end of the drive is to disallow access by installing ballards or other physical barriers at the edge of the driveway. Such a feature should be designed to minimize negative asthetic impacts on the historic landscape while ensuring that vehicles will not be able to use the driveway.

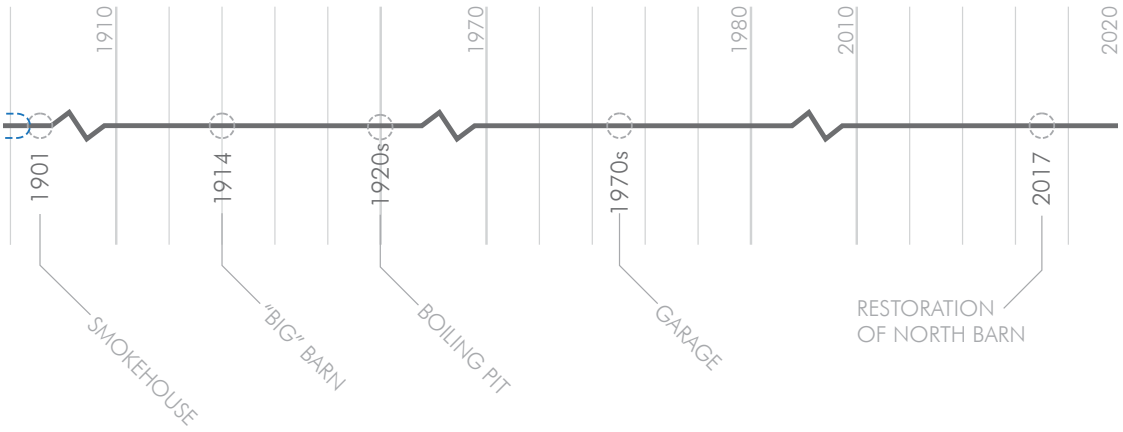
All driveway alterations are regulated by the Minnesota Department of Transportation (MnDOT). Although concerns have been mentioned by the CCHS about MnDOT's regulations concerning multiple access points to a site and access off Highway 5, it is likely that the grading at the edge of the driveway can be adjusted and physical barriers can be designed so that they are not defined as an access point. In addition, if CCHS consults with MnDOT, it is likely that exceptions will be approved due to the historic status of the site and historic status of the driveway itself, as well as the proposed use of the site for the benefit of public education and cultural enrichment.




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SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
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CORN CRIBS
CABIN
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

CORN CRIBS




1910
1970
1980
2010
2020
1901
1914
1920s
1970s
2017
SMOKEHOUSE
"BIG" BARN
BOILING PIT
GARAGE
RESTORATION
OF NORTH BARN

CORN CRIBS, 1856-1896

Condition: Not existing
Contributing to the Historic District: No

Historical Context For Corn Cribs

By Rolf Anderson

Corncribs, or structures designed to store ear corn, were built in Minnesota in the early settlement period. Corncribs were similar to granaries, except the walls of corncribs were slatted or perforated to allow more air to circulate. They were used throughout Minnesota, but especially in the southern half of the state where conditions were best for growing corn. The need for corncribs increased with the emergence of diversification and the rise of livestock farming.

Husked corn was stored in the corncrib where it continued to slowly dry. It was removed in batches as needed for feed year-around. The ears were shelled, and the shelled corn was stored in a granary. Some farmers also ground ear corn and fed it to beef cattle.

Corncribs were built in a variety of sizes and styles. In the early days, the height of the crib was limited to the height a man could conveniently shovel the corn from a wagon into the crib. Later, mechanical elevators determined height. Because ear corn weighed less than loose grain, corncrib walls did not need to support as much weight as granary walls. But all corncribs needed a site that was well-drained, a design that would provide good air circulation to cure the corn, and was accessible for loading and unloading. Cribs were often oriented to the north and south to catch maximum cross winds. They were frequently placed near fields for convenience at harvest.[72]

There were several corn cribs built at the Peterson Farmstead over the years, and it appears that multiple cribs were in use at the same time. The numerous diary entries discuss building, repairing, and moving cribs to new locations. Peterson's first reference to a corn crib was on September 29, 1856, when he was "building corn crib, chopped poles, put up boards, covered and chinked. . ." On February 25, 1860, he stated, "Began to build a corn crib." On July 8, 1867, "Mathias moved

72 Granger, 6.61-6.64.

the small corn crib." On June 23, 1887, "Sture and Frank Lundsten began to build a corn crib for me." On June 14, 1888, "Frank went to Waconia for red paint. Axel and Frank painted the corn crib." One of the last entries dated March 10, 1896, stated, "We loaded the small corn crib on the bob-sleds. Tomorrow we are going to move it."

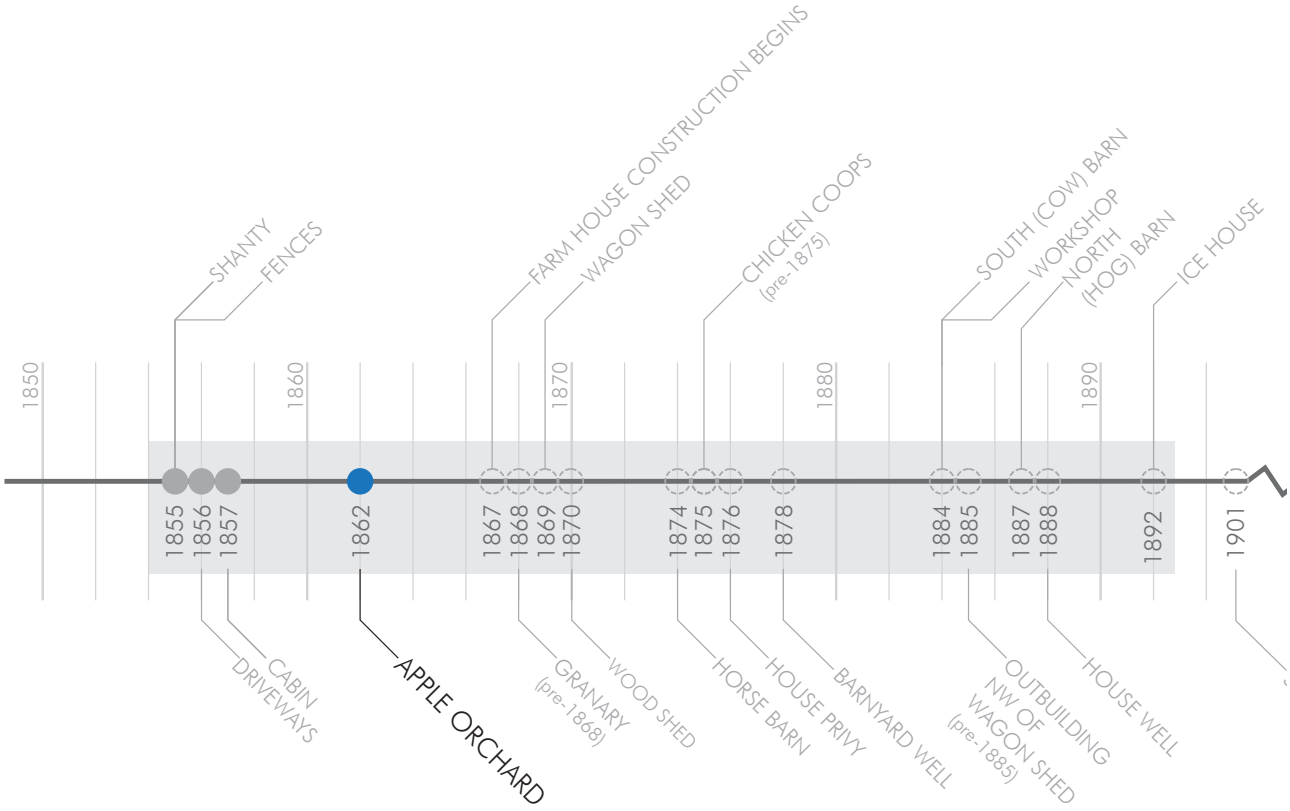
PHYSICAL DESCRIPTION

There were several Corn Cribs constructed, maintained, and moved on the farmstead throughout Andrew Peterson's lifetime. Based on descriptions in his diaries, they were all constructed of wood but more specific information than that cannot be discerned from the current translations of the diaries.

EXISTING CONDITIONS

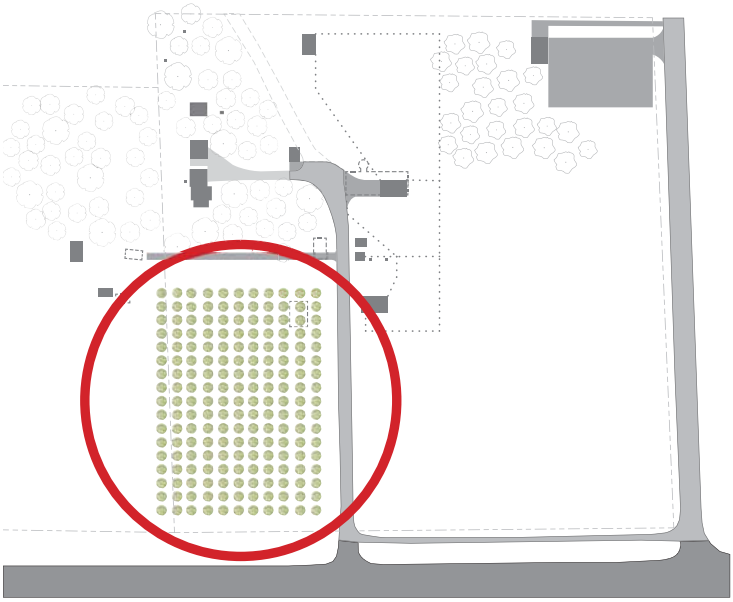
The Corn Cribs from Andrew Peterson's lifetime no longer exist.




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SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

APPLE ORCHARD

"Andrew and Hakanson are clearing for an apple orchard for me today. In the afternoon Taylor helped. I also helped."
-April 8, 1862



Site Plan (no scale)



Figure 35: 1885 photograph cropped to location of Apple Orchard.

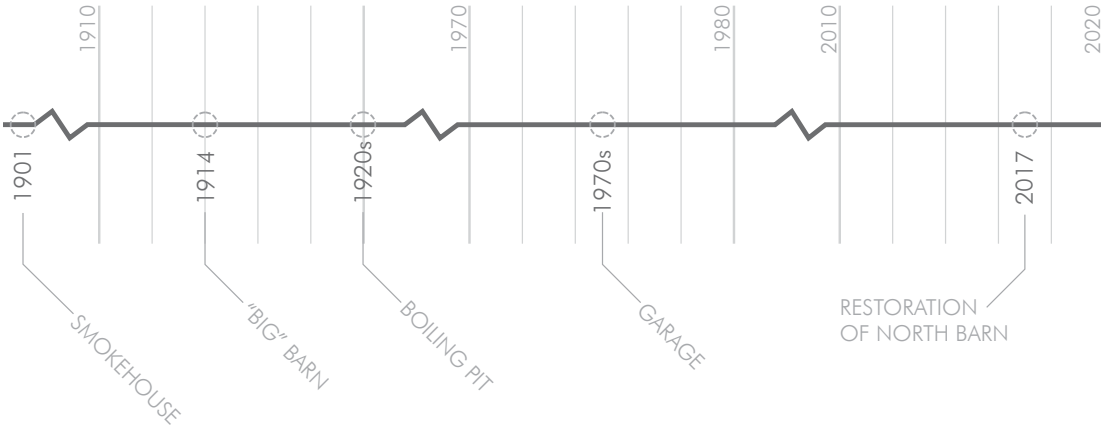




Figure 36: 1885 photograph of the Peterson Farmstead facing northeast, showing location of Apple Orchard.

APPLE ORCHARD, 1862-1898

Condition: Not existing
Contributing to the Historic District: Possible, if reconstructed

Historical Context For Apple Orchards

By Rolf Anderson

Farm orchards provided fruit for both home use and for sale. On many farms, orchards - like gardens and flocks of poultry - fell within the traditional sphere of women's responsibilities. Orchards, gardens, and poultry houses were all placed near the farmhouse so that their products would be convenient to the kitchen, and so that women could care for them while simultaneously watching children, cooking, washing, and cleaning. Placing poultry houses within, or near, the orchard made double use of the space and helped keep the insect population down.

Orchards for growing apples, pears, and plums were planted in straight, evenly spaced rows for ease of cultivation and management. Whenever

possible they were planted on sloping land so that air circulation reduced diseases, and near a temperature-moderating body of water. The best location for an orchard was considered to be the north or northeast slope of a hill.[78]

At least one of Andrew Peterson's orchards is clearly depicted south of the Farmhouse in an 1885 photograph.

PHYSICAL DESCRIPTION

Andrew Peterson recorded his apple experimentation and grafting in his diary. The diary indicates that he worked with a variety of different types of apples in his orchard starting in 1862. Up until his death, he continued to sell apples, apple trees, and grafts. Records kept by the Peterson children after his death indicate that the apple orchard was active until 1913, although it appears that no experimentation with apple variations or apple graft sales occured after Andrew's death. Historic photographs show that the apple orchard was located to the south of the house and to the west of the driveway. The 1885 photographs show the trees in rows. Andrew Peterson mentions many different varieties of apples. A diary entry states that Andrew made wooden labels, wrote the names of the apple trees on them, and hung them on the trees.[79] In addition, the diary names many different species of apples, including: Blue Pearmain, Transcendent crabapple, Winter (Fameuse), Duchess, Hyslop crabapple, Wealthy, King Winter, Haas, Canada, Hibernal, Lieby, Charlamoff, over 100 types of Russian apples, and more. Further information can be found on Andrew Peterson's apple orchards from articles he published.

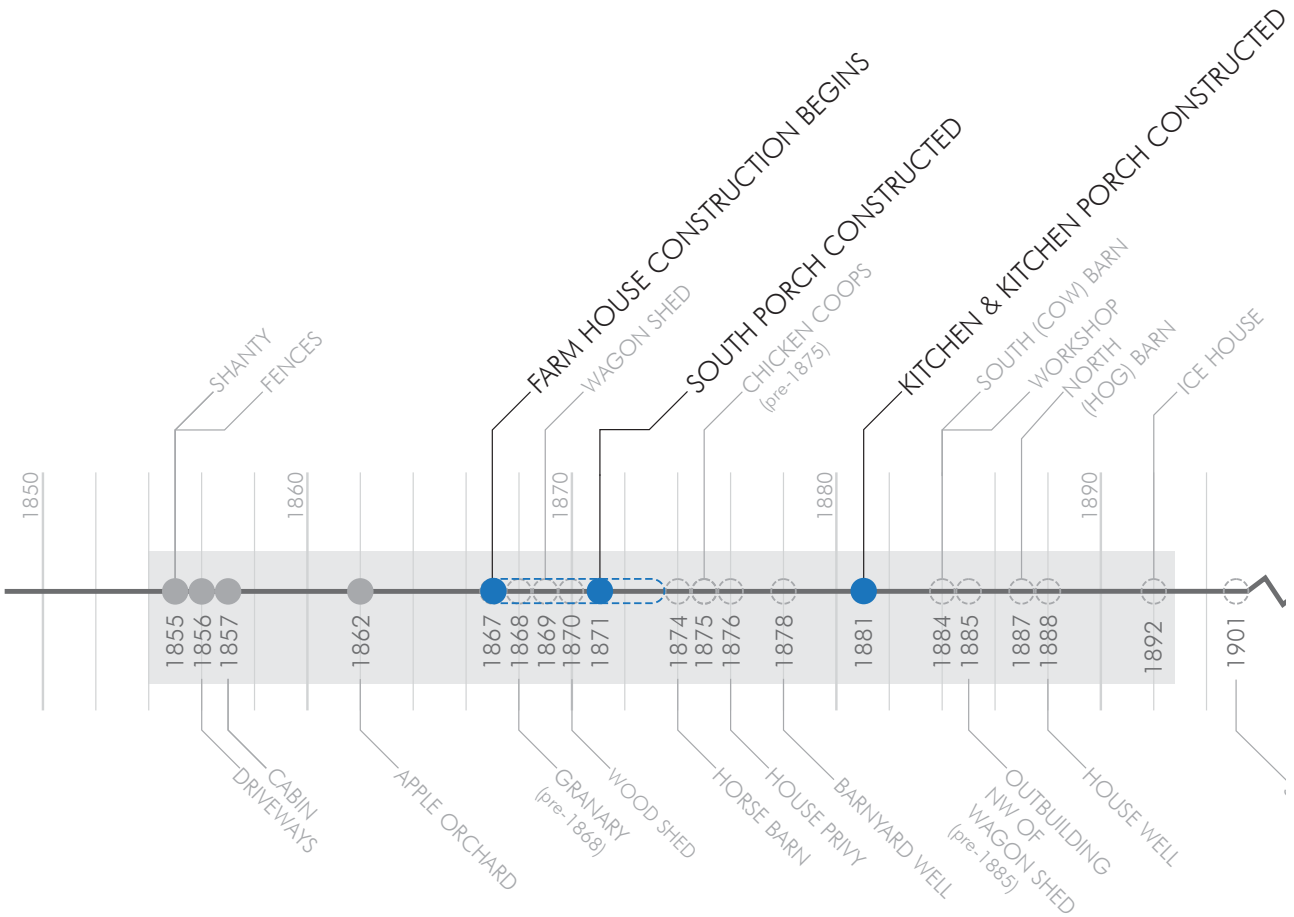
EXISTING CONDITION

The apple orchard no longer exists.

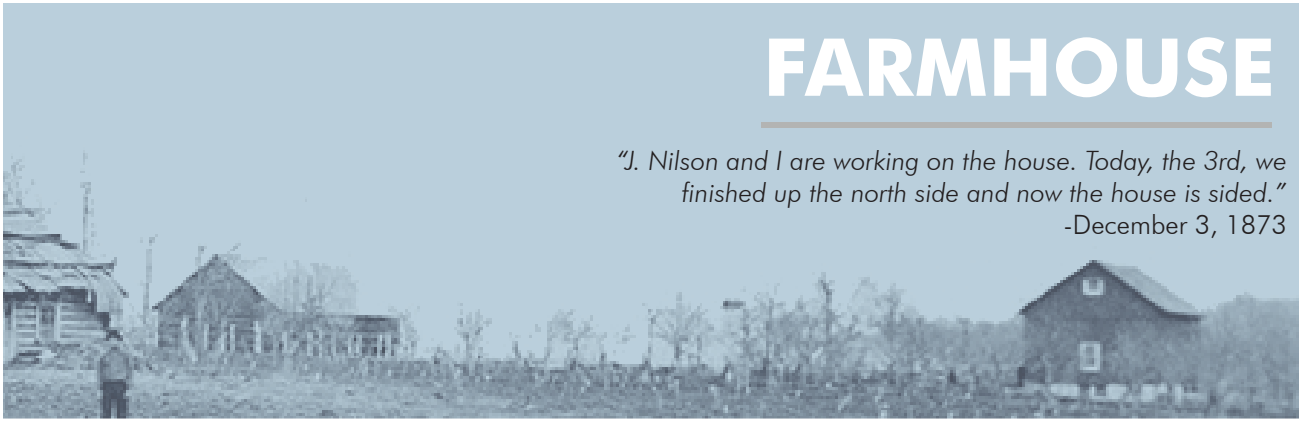
78 Granger, 6.345.

79 Ibid, May 24, 1890.

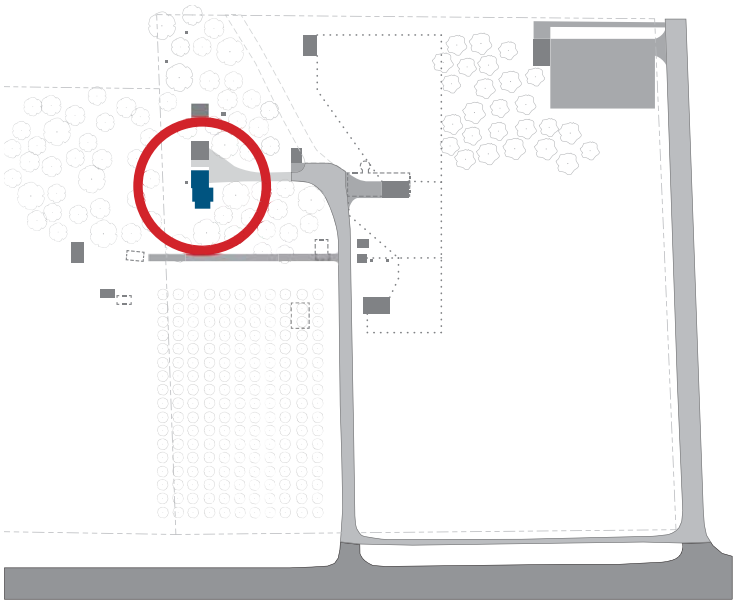



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FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
SOUTH PORCH CONSTRUCTED
CHICKEN COOPS
(pre-1875)
KITCHEN & KITCHEN PORCH CONSTRUCTED
SOUTH (COW) BARN
WORKSHOP
NORTH
(HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

FARMHOUSE



"J. Nilson and I are working on the house. Today, the 3rd, we finished up the north side and now the house is sided."
-December 3, 1873



Site Plan (no scale)



Figure 37: Farmhouse, 2017.

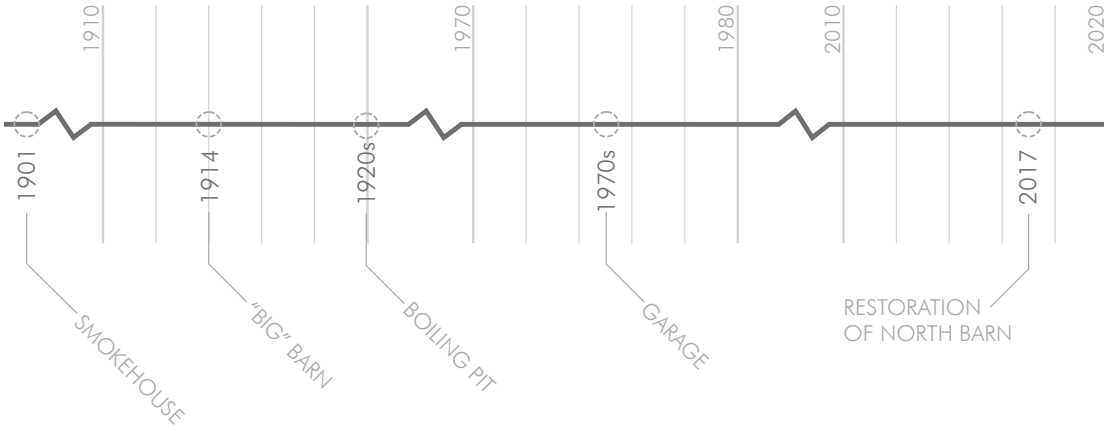




Figure 38: Farmhouse and the Peterson family, 1885.

FARMHOUSE, 1867-1881

Condition: Existing
Proposed use: Short-term - Residence for property caretaker
Long-term - Exterior and Main floor interpreted to 1885
Second floor as site offices
Proposed treatment: Rehabilitation
Contributing to the Historic District: Yes

SECTION ORGANIZATION

There is more documentation regarding the farmhouse than any other single structure on the Andrew Peterson Farmhouse. For that reason, this section of the report is more complex than those for other buildings and thus organized differently:

- Historical Context
- Exterior
  - o Physical Description
  - o Existing Conditions & Treatment Recommendations
- Interior Spaces
  - o Physical Description
  - o Existing Conditions & Treatment Recommendations
- Interior Finishes and Systems
  - o Physical Description
  - o Existing Conditions & Treatment Recommendations
- Considerations for Rehabilitation
- Considerations for Temporary Inhabitation
- Structural Assessment



Figure 39: 1877 photograph of the farmhouse, camera facing northeast.



Figure 40: Post-1885 photograph of the farmhouse, camera facing northwest.

Historical Context For The Farmhouse

By Rolf Anderson

Despite the fact that the farmhouse was usually one of the two most important buildings on a farm (the other being the principal barn), many Minnesota farmhouses were modest structures. Farmhouses often received a different allocation of total family resources than did comparable houses in the city. At the same time that the farm family needed a house, they also needed to make constant investments in land, seed, equipment, livestock, fencing, and numerous other farm structures.

Nonetheless, the farmhouse functioned as the work center for the farm where essential and labor-intensive chores were performed every day. Preparing and preserving food, feeding family and work crews, washing cream separators, drying seed corn, hatching chicks, and bottle feeding baby lambs were just a few of the numerous farm tasks that took place in the house.

Out of necessity, many farmers had to construct their houses in increments, building only what was needed at the time. As a result, many farmhouses grew piece-meal from a frontier log cabin to larger houses with two or sometimes three additions. When farm families built a new house, the old house was often put to good use as a summer kitchen, worker's housing, barn, shed, or granary. Some farms contained evidence of several generations of housing on a single property.[80]

The Peterson farm followed the pattern of building successive farmhouses of increasing size and complexity. The first house was a log shanty; the second house was a log cabin; and the third house was a log house that was later sided and expanded with a kitchen addition.

Peterson first discusses the log shanty on June 23, 1855, when he states he is cutting timber for the building. Construction began on July 12, 1855, and Peterson later states that he "Split planks for doors and frames in the shanty." He installed windows, built a chimney, and chinked the walls. He moved into his new home on November 15, 1855.

Peterson began construction on his second home, a log cabin, on August 6, 1857. He also writes of constructing a cellar. It's not clear when he moved into the cabin, but by December 23, 1857 he's ready to expand the building. He writes, "Cut down elm logs for enlarging my house." It's not clear how the cabin was used after Peterson moved into

80 Granger, 6.143-6.146.

his third house in 1870, but he recorded improvements that continued to be made to the building. Then on March 31, 1886, he states, "Today we took apart the cabin and hauled the logs out to the north of the workshop where I will put it up again." On April 14, 1886, he notes he filled in the old cabin cellar.

Work began on Peterson's third and final farmhouse on March 20, 1867. He records the construction of the house, and various improvements over the years, in 304 entries in his diary, vastly more than for any other building on the farm. In 1867, he hewed timbers for the house, dug a partial cellar, installed the foundation, and erected much of the structure. In 1868, the remaining structure and the roof were completed. In June 1869, he "chopped out door and window openings" in the log walls. The work continued in 1870 with the assistance of John Osterman and Jon Nilson. The stairs and partition walls were completed, and windows and doors were installed and painted. The interior of the house was plastered. Finally, on November 14, 1870, Peterson wrote, "In the morning we moved into our new house."

In 1873, the front porch was built and the entire log house was covered with wood siding. In 1881, a brick addition was constructed for a kitchen. This time, the majority of the construction materials appear to have been purchased. In January and February 1881, Peterson bought bricks in Chaska, and lumber, doors, and windows, in Minneapolis. He also wrote, "We ordered lumber from Eastman and Boyd's lumber yard and loaded our sled with lumber." The addition was completed in October 1881.

Peterson continued to record maintenance and improvements to the Farmhouse. His last entry about the Farmhouse is dated March 15, 1898 where he noted, "Frank painted the wainscoting in the large room."



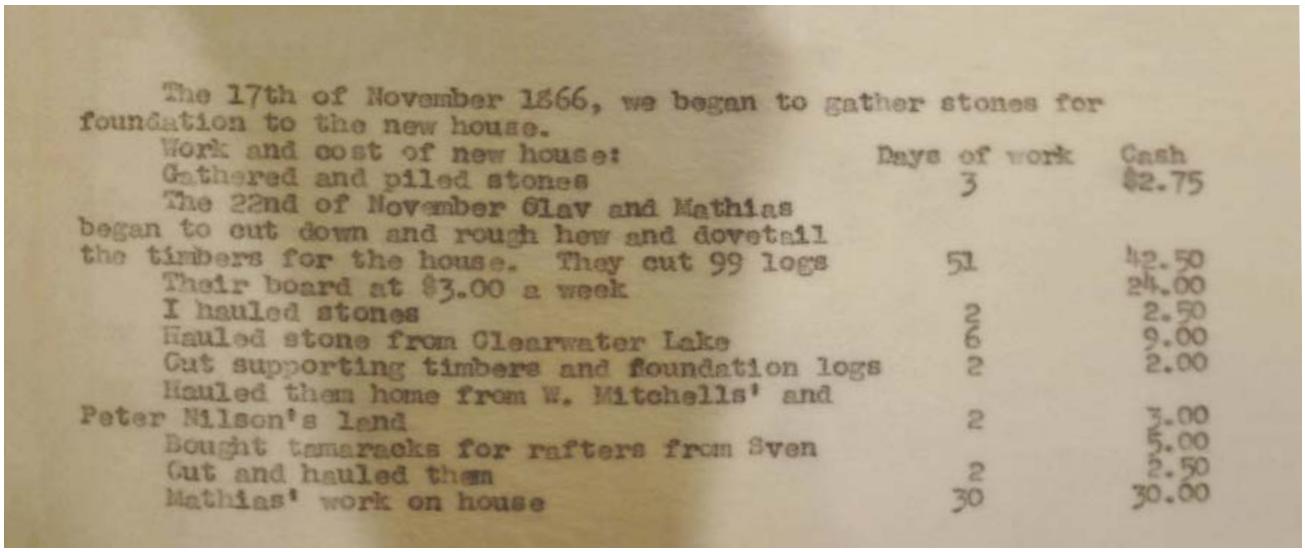
Figure 41: East facade of 1867 log portion of the farmhouse.

PHYSICAL DESCRIPTION - EXTERIOR

The Andrew Peterson farmhouse is accessed off MN State Highway 5 via an approximately 500' long driveway. It was originally separated from the highway by an apple orchard and surrounded by small outbuildings.

Members of the Peterson family resided in the farmhouse from November 14, 1870 until 1943 when Emma Peterson, the last of Andrew's children to live at the farmstead, passed away. The house has had subsequent owners and occupants and a long history of modifications and updates. The future use and work on the building will need to be carefully planned to balance the needs of the site with the historic interpretation of the site.

The farmhouse was constructed between 1867 and 1881 by Andrew Peterson. It is made up of two basic parts that have different forms, materials, and structural systems that are ideal to their uses: the two-story portion of the house and the one-story kitchen addition. The main part of the house is a log structure with tongue-and-groove vertical ship-lapped siding. The kitchen addition is wood frame with brick veneer.



The 17th of November 1866, we began to gather stones for foundation to the new house.

Work and cost of new house:	Days of work	Cash
Gathered and piled stones	3	$2.75
The 22nd of November Olav and Mathias began to cut down and rough hew and dovetail the timbers for the house. They cut 99 logs	51	42.50
Their board at $3.00 a week		24.00
I hauled stones	2	2.50
Hauled stone from Clearwater Lake	6	9.00
Cut supporting timbers and foundation logs	2	2.00
Hauled them home from W. Mitchells' and Peter Nilson's land	2	3.00
Bought tamaracks for rafters from Sven		5.00
Cut and hauled them	2	2.50
Mathias' work on house	30	30.00

Figure 42: Translated text from Andrew Peterson's ledger dated November 17, 1866.

The main portion of the house was completed first, between 1867 and 1873, although there were many modifications to the house by Peterson after 1873. This portion of the building is a log structure with a gable roof. This construction system took advantage of the wood which was plentiful on the Peterson Farmstead. Peterson was able to cut and prepare the logs himself, with help from his friends and neighbors, which was an economical solution. Log construction also provided excellent insulation against the bitter Minnesota winters, especially compared to timber frame or light wood frame construction methods. The construction schedule for log construction allowed the family to move in before the exterior cladding was installed, so work could continue on the house while they enjoyed their new home. In all respects, the log construction method was ideal to the time, place, and skills of the Peterson family.

The kitchen addition to the house was completed in 1881, eleven years after the family moved into the main portion of the house. This single-story addition was constructed in timber with Chaska brick veneer. The gable roof runs perpendicular to the main portion of the house. Brick was likely chosen because it is non-combustible and would isolate any potential fire in the kitchen, sparing the rest of the house.



Figure 43: West facade of the 1867 log portion of the farmhouse.



Figure 44: View of the farmhouse looking northeast.



Figure 45: South facade of the farmhouse and porch.



Figure 46: Basement space beneath the 1867 log portion of the farmhouse.

FOUNDATION

The foundation of the house is made of stone. Andrew Peterson writes about procuring stone from Clearwater Lake in his ledger in 1867.[81] He referenced foundation building in his diaries as well. The process he describes for the construction of the 1867 foundation matches the type of foundation that exists today; a type of construction that is no longer typical. The relevant excerpts from the diary are as follows:

- July 8, 1867: "Today Mathias Falk began to work on the house. He and I marked out for the foundation."
- July 10, 1867: "Mathias dug for the foundation."
- July 11-14, 1867: Peterson describes foundation building
- July 15-18, 1867: Peterson describes cellar digging

In other words, to construct the foundation walls, they dug a trench where the foundation walls were to be located. Then they constructed the stone foundation walls within those trenches, essentially filling the trenches with stone and mortar. Next they dug out the earth from the interior of the foundation walls to create the cellar. The first cellar was rather shallow, to the depth of the outer-most foundation walls visible in the basement of the farmhouse. The cellar was made deeper in 1869 and 1870.[82] At that time, Peterson describes procuring more stone and repeating that process. This second round of work included digging a trench at the location of the inner-most stone walls visible in the basement currently, constructing stone walls within that trench, and excavating the earth within those walls to the current depth of the basement floor. This method of construction allowed for phased construction of the foundation and basement without undermining the first phase of foundation work.

81 Andrew Peterson Ledger, 1867.

82 Andrew Peterson Diaries, 9/6/1869-10/19/1869 and 5/21/1870-8/2/1870.

LOGS

The structural system of the 1867 portion of the farmhouse comprises logs that are roughly 12" tall and deep at the first floor, thinner at the attic; hewn square; and jointed at the corners with dove-tails. This type of construction is similar to that found in the original, log portion of the granary, which may be contemporary to the farmhouse. Andrew Peterson was cognizant of the best species of wood to use for log construction based on the location within the wall as he specifically records hewing white oak for the bottom-most logs of the walls.[83]

WOOD CLADDING

The house is clad in tongue and groove, shipped-lap siding which was installed in November of 1873, nearly three years after the family moved into the house. The current cladding on the house appears to be similar to, and likely the same as, the original siding, corner boards, window and door trim, and roof edge fascia as seen in the historic photographs of the house during the period of significance.

While parts of the exterior of the house were painted earlier, the cladding and north porch were painted in August 1877.[84] Peterson listed the materials he purchased for painting the exterior of his house in his ledger on August 22, 1877 as the following:

- 7 gallons linseed oil from Kohler at 90 cents, $6.30
- 2 kegs white lead, $6.00
- 1 keg white lead, $2.85
- 15 lbs. ochre at 8 cents, $1.20
- 2 lbs. red paint at 6 cents, $.12
- Lamp black, $.10
- Paint total, $15.27

On October 24, 1877, Peterson noted in his ledger that he paid "photographer Lindahl in Watertown for picture of my house." The historic photographs of the house from 1877 and 1885 are black and white, so it is impossible to tell detailed information



Figure 47: Log wall structure at corner.



Figure 48: Exterior tongue and groove siding.

83 Andrew Peterson Diaries, March 20, 1867.

84 Andrew Peterson Diaries, August 23, 1877.



Figure 49: Chaska brick veneer on north side of the kitchen addition.

about color. However, the house appears to have the same contrast between colors and looks similar from the 1877 photograph and the 1885 photographs. It is likely that the exterior color scheme did not change between 1877 and 1885.

The authors of this report conducted paint analysis on the exterior of the house during the winter of 2017. Very few paint layers remain on the cladding that has been exposed to the elements. For that reason, the siding and trim near the main entrance to the house, inside the south porch, was selected for sampling. The match for the siding and corner boards is Sherwin Williams "Foggy Day" SW 6235 and the door trim, window trim, and roof edge fascia is "Indian White" SW 0035. The match for the water-table board is the same as the porch and barn red, which is listed in the porch section of this report. The appropriate gloss level for modern paint replicating historic linseed oil-based paint is Gloss.

BRICK VENEER

The Chaska brick veneer on the kitchen addition appears to be original to structure, with the exception the upper portion of the north wall, which was modified to accommodate the roof of the enclosed porch.

The bricks are laid in a running bond pattern with header courses at the window sills. The window headers are brick arches which are partially obscured by the cornice board on the west façade.



Figure 50: West facade of the kitchen wing.

In his ledger, Andrew Peterson recorded hiring Charley Klatt for work on the kitchen foundation: "Charley Klatt for 8 days cement work on cellar, cistern, foundation at $2.50 a day, $20.00."[85] In his diaries, Peterson also recorded that Klatt laid the brick veneer on the kitchen addition.[86]

85 Andrew Peterson Ledger, 5/31/1881.

86 Andrew Peterson Diaries, 8/20-25/1881.

PORCHES

There are two porches on the house. Although there were two porches in those locations during the period of significance, the existing porches are of later construction. The porch on the south side of the house which would have been the formal entrance to the house was constructed in 1871. The original porch was open (no balustrade or rail) with a wood floor and stone foundation. The single-story porch had a hip roof which was supported by four timber posts with chamfered corners.

The kitchen porch on the south side of the house was also a single-story porch which was constructed with the kitchen addition in 1881. It had an L-shaped hip roof that covered both the cellar entrance on the south side of the main portion of the house and the porch. The kitchen porch is less clearly visible in historic photographs than the south porch but appears to have had three timber posts, similar to those on the south porch.

Both the north porch and the south porches have been replaced and are currently enclosed, unconditioned spaces.

A timber that appears to be a porch post from the house (based on historic photographs) is in the South Barn. That post is red and paint analysis showed several layers of red paint. While the historic photographs are black and white, the porch posts, porch floors, and porch roof fascia appear the same gray tone as the barns. Andrew Peterson routinely mixed paint and pigments, but he was also practical. It is assumed that the red of the porch posts is the same as the red of the barns during the period of significance of the farmstead. That red color is matched to Sherwin Williams Solo Paint (semi-gloss or gloss) pigmented as follows:

Colorant	oz.	32	64	128
B1-Black	-	57	1	1
R2-Maroon	2	40	1	-
R3-Magenta	6	45	1	1



Figure 51: East facade of the north wing, showing enclosed porch addition.



Figure 52: Evidence of former porch on south side of the farmhouse.



Figure 53: Standing seam metal roofs.



Figure 54: Interior of upper floor window.

ROOF AND ROOFING

The roofs of the main house, kitchen addition, and porches were originally wood shakes but are currently standing-seam metal.

Gutters and downspouts appear in even the earliest photographs of the house and Peterson writes of installing and painting them early in construction. In the historic photographs, the gutters and downspouts look like the same color as the window and door trim. The gutters and downspouts on the house currently are not original to the structure.

CHIMNEYS

Like the porches, the chimneys have changed over time. The original brick chimneys were replaced early in the construction of the house and made taller as indicated in Andrew Peterson's diaries and historic photographs. By 1885, there were two chimneys in the main portion of the house (one over the "hall" and one over the "parlor") and one over the kitchen addition. A chimney exists in the location of the Parlor chimney. It appears to be a different size and height from what existed in 1885.

WINDOWS

Wood, double-hung windows were used throughout the house, with the exception of the attic windows which are triangular, fixed windows with two vertical muntins on each window.

Based on historic photographs, it appears that the upper floor double-hung windows are original to the building and the main floor windows are not original to the building. The windows in the 1885 photographs of the house have a six over six pane configuration. The current windows appear quite similar but have a two over two pane configuration. The main floor windows have certainly been modified in the past 132 years; either the entire window unit or just the window sashes have been replaced since 1885.

Many of the windows in the kitchen addition have been replaced in recent history with modern, vinyl,

double-hung windows that are smaller than the original windows. Some of the wood windows in the kitchen are double-hung wood windows. Those windows may be original to the structure.

There is evidence in Peterson's diaries of wood-framed screens in 1883, but they do not appear in the 1885 photographs. There are aluminum storm windows on the house currently.

There are shutters on the east façade windows. There were no shutters on the house in 1877 or 1885 when photographs were taken of the building. There are no entries in Andrew Peterson's diaries about window shutters.



Figure 55: Exterior of farmhouse window on main floor, east facade.

EXTERIOR DOORS

As there are now, there were two exterior entrances to the house historically, one at each porch. The kitchen entrance at the east porch no longer exists. The main entrance door at the south porch appears to be original to 1882.

Early photographs of the house show a simple door with no sidelights at the main entrance. The photographs from 1885 show a wood-panel door flanked by sidelights. Peterson describes hiring Jons Nilson to make the frame for the door and paying Kohler for the glass at the "entry window" in his ledger.[87] It appears that the current door and sidelights are from this exchange in 1882.

There is no screen door shown in the 1885 photograph and none exists currently. Peterson describes a screen door at the kitchen entrance in the diaries in 1883,[88] but there is no diary entry for a screen door at the main entrance.



Figure 56: South entrance door.

87 Andrew Peterson Ledger, 10/10/1882 and 10/12/1882.

88 Andrew Peterson Diaries, 6/21/1883.



Figure 57: Damage to foundation at southeast corner of the two-story log portion of the farmhouse.



Figure 58: Log structure and siding deterioriation on northeast corner of main portion of house.

EXISTING CONDITIONS & RECOMMENDATIONS - EXTERIOR

Andrew Peterson photo-documented his house several times during the period of significance. Those photographs provide a wealth of information necessary for treatment of the building today. The recommended treatment for the farmhouse is Rehabilitation, with the exterior and the main floor restored to 1885. Following are the exterior condition issues and treatment recommendations to mitigate those issues.

FOUNDATION

The majority of the visible areas of the foundation walls appear to be sound, free from cracks and voids. The east foundation wall exhibits damage that appears to be due to the installation of modern utilities. It is recommended that the masonry in this area be repaired.

LOGS

The highest priority work is structural stability and water mitigation. The structural engineer has determined that several of the logs at the base of the walls have deteriorated. Selective log replacement is necessary, which will require the removal of some of the cladding and trim in order to expose and properly inspect the structure. The repair work should be carried out by a contractor who has experience specifically with historic log restoration. Since the logs are covered on both the interior and exterior faces of the walls, it is necessary to complete this work before any other exterior restoration work.

WOOD CLADDING

Areas of the cladding have deteriorated, particularly around downspouts and close to the ground. Corner boards and water table boards have been patched and replaced. The siding and trim paint is failing, leaving areas of wood exposed. As described in the previous section, it is recommended that the exterior trim be removed to the extent necessary to inspect the underlying logs for deterioration and repair.

Deteriorated siding and trim should be replaced in-kind and all wood siding and trim should be painted to match the color scheme from the period of significance of the farmstead.

BRICK VENEER

The masonry shows deterioration, primarily in joints along the bottom of the walls near downspouts. The southwest corner of the kitchen addition is severely damaged. Several courses of brick are displaced and there is a void through the wall, creating an opening directly into the basement.

Rebuilding the brick veneer at the southwest corner of the kitchen addition and repoint the lower portion of the wall where the joints have eroded is recommended. It is recommended that mortar and brick samples be tested prior to determining the mortar type to make sure that the selected mortar will be softer than the adjacent brick. This will ensure that the mortar is a sacrificial component of the wall assembly which will prevent deterioration of the brick masonry itself. The new mortar should match the historic mortar in color, aggregate, texture, and profile.

PORCHES

The porches on the house were not constructed during the period of significance. It is recommended that a historical architect be employed to study the physical evidence from the house, site, and remaining porch post, in combination with historic photographs, to determine the original design and extent of the porches. It is recommended that the historic porches be reconstructed and painted per the color scheme outlined above. Reconstruction of the porches will require restoring the cellar entrance on the north side of the two-story portion of the house. When the porch is reconstructed, the north façade of the kitchen addition will require modification to the roofline and the eastern side of the north wall.



Figure 59: Damage to brick veneer at southwest corner of kitchen addition.



Figure 60: Cellar entrance that has been covered over by the enclosed porch by the kitchen addition.



Figure 61: The gutter and downspout on the west side of the kitchen addition.



Figure 62: Interior of main level window in kitchen addition, believed to be original.

ROOF AND ROOFING

The roofing on the farmhouse is standing-seam metal. The original roofing material during the period of significance was wood. It is recommended that if wood roofing is found under the existing roofing, that it be documented. It is further recommended that the roofing be replaced with either wood shakes or shingles. The descriptions in the diaries are insufficient to provide conclusive evidence as to the type of wood roofing Peterson installed as he both purchased roofing and made his own, calling both "shingles".

When the roofing is replaced, the sheathing and framing should be inspected.

There is evidence of water staining on the wood around the chimney in the attic. It is recommended that the flashing around the chimney be repaired or improved concurrent with roofing replacement.

The gutters and downspouts on the building are not original to the structure. They also do not shed water effectively. It is recommended that painted gutters and downspouts should be installed in the configuration that appears in historic photographs.

CHIMNEYS

During the period of significance, the house boasted three chimneys. One chimney exists currently. It is a different height and design than those original to the house. It was likely reconstructed above the roof, as it is in the same location as one of the historic chimneys. We recommend reconstructing the three brick chimneys to their 1885 appearance, based on historic photographs.

WINDOWS

The windows on the main level of the house have a different pane configuration than the windows from the period of significance. It is recommended that those window sashes are replaced with wood sashes to match those in historic photographs and the upper floor windows.

The vinyl windows in the Kitchen Addition are not original to the farmhouse. It is recommended that they be replaced with wood, double-hung windows to match those in historic photographs and the upper floor windows.

It is recommended that the exterior storm windows and shutters be removed, historic windows be restored, and windows and window trim be painted to match the exterior color scheme from the period of significance as outlined above.

EXTERIOR DOORS

The main entrance to the house, at the south porch, appears to be from the period of significance of the farmstead. It is recommended that it be repaired to its 1880's condition (by removing modern locks, replacing modern hardware with period appropriate hardware, patching associated holes, and repainting to the original, exterior color scheme).

The door at the kitchen entrance is not historic. It is recommended that a door similar to the main entrance door be installed at the kitchen entrance (not including sidelights), along with a simple, wood-framed screen door.



Figure 63: Interior of a vinyl window in the kitchen addition.

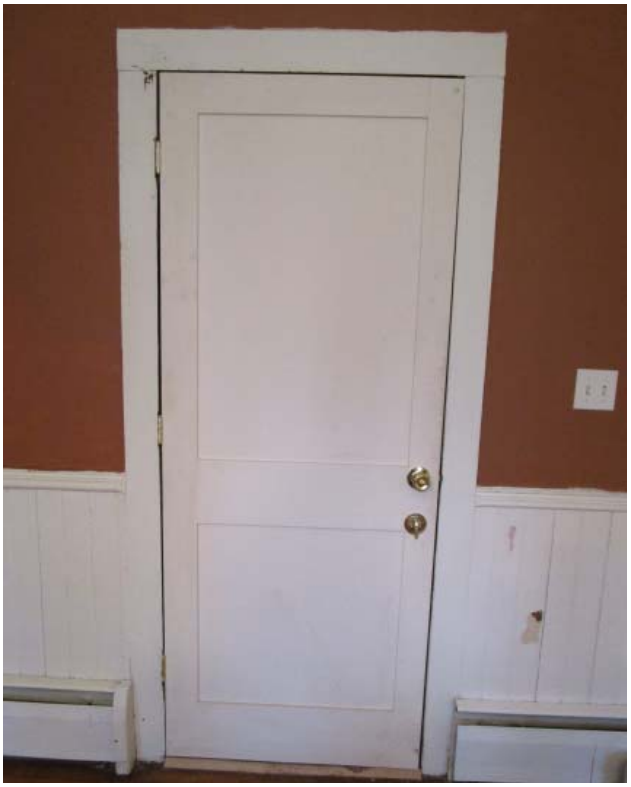


Figure 64: Interior of non-original kitchen entrance door.

PHYSICAL DESCRIPTION - INTERIOR SPACES

The Andrew Peterson farmhouse follows a traditional "hall and parlor" floor plan with the hall on the west half and the parlor on the east half. This type of floor plan can be seen at contemporary farmhouses in Minnesota: the Grimm farmhouse (1876) and the Pierre Bottineau house (1854). The commonalities between the Grimm and the Peterson farmhouses are especially remarkable. Given their proximity to each other and shared interest in horticultural innovation, it is possible for the two families to have influenced each other's houses. Though the Grimm house was constructed of brick and the Peterson house was constructed primarily of log, the two are alike in many ways both interior and exterior, giving some credence to the idea that time and place were more influential on housing design in the late 1800's in Minnesota than the builder's nationality. The German Grimms and Swedish Petersons built similar houses, using construction methods best suited to their own skillsets and available materials.

There is not evidence for how the Peterson family used the Parlor and Hall spaces, however, a parlor would have traditionally been the main gathering and living space for a family and a hall would have traditionally served as the kitchen and dining area. The Parlor has remained largely unchanged since construction. It is the largest room in the log structure portion of the house, occupying the entire east half of main floor.

The Hall has undergone significant changes since construction. After the kitchen addition was constructed in 1881, the original Hall was remodeled. Based on Peterson's diary entries, the Hall was split into two smaller rooms in 1882. The two rooms currently on the west half of the main floor are a bedroom and a bathroom. He called them "the small ripper rooms"[89] and "two small rooms"[90]. It is speculated that they were both bedrooms.

The kitchen is a large room that, along with two small storage rooms on the north end of the room, occupy the entire 1881 addition to the house. While the interior partitions appear to be in their original locations, the kitchen has been remodeled with modern day cabinets and appliances.

The upper floor of the house currently contains a stair hall, three bedrooms, three closets, and a bathroom. The partition wall between the bathroom and the adjacent bathroom appears to be of modern construction and not from the period of significance. The closets likely date to 1878, when the upstairs rooms were being completed. During the month of October 1878, Peterson describes finish work in the upper floor of his house, including this entry from October 20, 1878: "I put up screw hooks in the closets on which to hang the clothes."

89 Andrew Peterson Diaries, 10/9/1882.

90 Andrew Peterson Diaries, 10/10/1882.



Figure 65: Exterior photo of the Grimm farmhouse, courtesy of the Minnesota Historical Society.



Figure 66: Exterior photo of the Pierre Bottineau house.

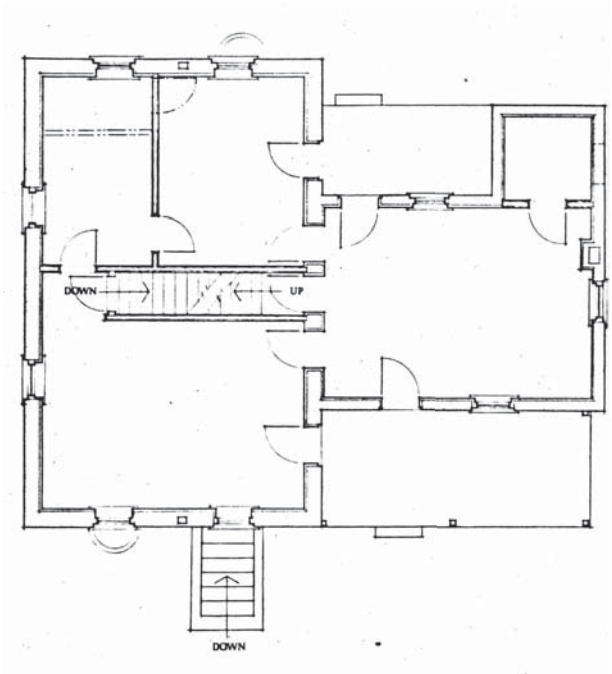


Figure 67: Plan of the Grimm farmhouse, no scale.

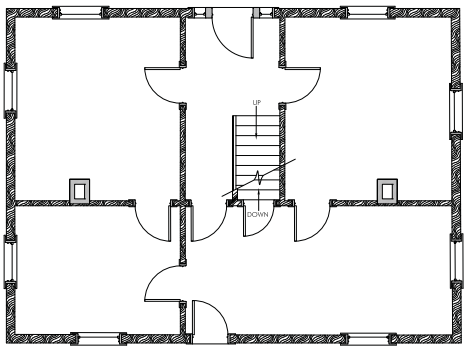


Figure 68: Plan of the Pierre Bottineau house, no scale.



Figure 69: The deteriorated southwest corner of the kitchen addition.



Figure 70: Detailed view of a hole in the southwest corner of the kitchen exterior walls.

EXISTING CONDITIONS & TREATMENT RECOMMENDATIONS - INTERIOR SPACES

Despite the many modifications that have been made to the farmhouse since construction began in 1867, the interior spaces from the period of significance of the property are remarkably intact. It is recommended that the addition of the bathroom on the upper floor, segmenting the southwest bedroom in two, be reversed and the floor plan return to the four-bedroom layout original to the house.

CCHS has reported standing water in the basement of the house. There are several ways in which this problem can be mitigated depending on the type of under and around the house and the historic level of grade around the house. It is recommended that the recommended repairs be made to the house first, including installation of proper downspouts and gutters and rebuilding of the kitchen wall that has a void open to the exterior. If the problem persists, it is recommended that a historical architect and civil engineer work together to explore options for passive stormwater management on the site which may include regrading around the perimeter of the house, subgrade drainage lines, or another means to properly drain water away from the basement. A Cultural Landscape Report would be useful for this work as maintaining the historic grade around the house is desirable and determining the relationship between the house and the landscape could be in the scope of such a report.

PHYSICAL DESCRIPTION - INTERIOR FINISHES & SYSTEMS

The original finishes and systems in the house are simple and durable. They are described below:

FLOORING

The flooring throughout the house is 5½" wide tongue and groove planks. Peterson describes painting the flooring in the kitchen,[91] but the rest of the floor was unpainted.

WALLS

The walls in the two-story, 1867 portion of the farmhouse are as follows (from outside to inside):

- Ship-lapped, wood siding (nailed to log structure)
- Log structure (chinked at horizontal joints between logs) with dovetailed corners
- Plaster on wood lath (lath nailed to log structure)
- Wood window, door, and baseboard trim (nailed to log structure, projecting slighting from the face of the plaster)

The walls in the 1881 kitchen addition are similar (from inside to outside):

- Brick veneer
- Wood framing
- Plaster on wood lath (lath nailed to wood framing)
- Wood window, door, baseboard trim, with (nailed to wood framing, projecting slighting from the face of the plaster)

Finishing the interior of the walls with plaster and lath was described in Andrew Peterson's diaries several times. The process for procuring and mixing the plaster are also described in the diaries, as in this entry from October 3, 1882: "Axel and Carl flailed matted cattle hair to prepare it for the mixing with the plaster."



Figure 71: Stairway in the Andrew Peterson farmhouse.



Figure 72: Exposed plaster wall in an upper level bedroom.

91 Andrew Peterson Diaries, 5/19/1884.



Figure 73: Parlor door trim.



Figure 74: Window trim and wainscoting in the kitchen.

TRIM

The base board throughout the house is a simple 5¼" tall, painted board. It is attached to the logs or partition wall framing, depending on the location within the house. The flooring runs under the base board and the plaster on the walls abuts the top of the baseboard, leaving a slight reveal between the base and the plaster.

The kitchen is the only room in the house that has wood wainscoting on the lower portion of the walls. Peterson recorded the purchase of wainscoting for the kitchen in his ledger[92] and its installation in his diary.[93]

Crown moulding was a tradition manner in which to cover the rough edges of plaster walls at the ceiling. Since most of the wall surfaces have been covered over, it is assumed that those walls either did not have crown moulding or the crown moulding was removed prior to the installation of the wall covering. In order to determine the appropriate locations to install crown moulding during the rehabilitation of the building, it is recommended that a historical architect be present during the removal of the wall coverings to look for evidence of crown moulding. Since the plaster walls exposed on the upper floor bedrooms do not have crown moulding, it is likely that the upper floor rooms did not originally have crown moulding.

Most of the door openings and window frames throughout the house have a common profile. Some window and door frames are clearly modern replacements or retrofits. The existing window and door trim that is original to the period of significance is drawn in detail at the end of this section.

CEILING

The ceilings throughout the house (both the 1867 and 1881 portions of the house) are tongue and groove, bead board, painted white. The purchase

92 Andrew Peterson Ledger, 2/28/1881.

93 Andrew Peterson Diaries, 8/29/1881.

of ceiling boards was listed in Andrew Peterson's ledger along with other kitchen addition materials.[94] He also records installation of ceiling boards in the porches[95] and installing ceilings in the house elsewhere without further detail.[96] It is assumed that the bead board ceilings throughout the house are from the period of significance because of the indirect references in the ledger and diaries, but also because of the order of construction and layer of adjacent materials. The closets on the second floor, which Peterson describes building,[97] are under, and do not interrupt, the ceilings.



Figure 75: Parlor ceiling.

COATINGS

Based on paint analysis onsite and Andrew Peterson's diaries, it is hypothesized that the interior plaster walls and wood trim were originally coated in two coats of whitewash. Whitewash was a commonly-used, traditional, lime-based coating.

There is evidence in Andrew Peterson's diaries and ledgers that some of the interior of the house was painted, with linseed oil-based paint, during the period of significance of the property. Unfortunately, too much of the interior surfaces are covered over and concealed to complete a comprehensive paint analysis of the interior of the house.

BUILDING SYSTEMS

Because the exterior walls of the house are log, retrofitting modern-day building systems (mechanical, electrical, and plumbing) in the building likely posed challenges to previous owners. In order to install modern building systems, boxes and wires were run along the trim on the exterior of the house. In addition, a great deal of exposed conduit and pipes were installed inside the house. During the period of significance, toilets were provided by way of privies,[98] and, perhaps chamber

94 Andrew Peterson Ledger, 2/28/1881.

95 Andrew Peterson Diaries, 9/7/1881.

96 Andrew Peterson Diaries, 10/10/1882.

97 Andrew Peterson Diaries, 11/20/1878.

98 Andrew Peterson Diaries, 12/3/1877.



Figure 76: Photograph of stove and chimney on west wall of parlor, 1977.

pots; water was provided by way of wells (one is located immediately west of the kitchen) and a cistern (location unknown);[99] and heat was provided by way of stoves.[100]

Originally, there was one stove in the Parlor, one in the first-floor, north bedroom, and one stove in the kitchen addition.[101] There may have also been a stove on the second floor as Peterson describes "putting up a heater"[102] during the same time-period as finishing the second floor of the house.

Currently, the house is heated via base board heating. It has modern, running water to the bathrooms and kitchen. It is equipped with modern electrical light switches, receptacles, and lighting.

99 Andrew Peterson Diaries, 5/23/1881.

100 Andrew Peterson Diaries, 12/13/1876.

101 Andrew Peterson Diaries, 12/14/1875, 11/15/1882, 10/11/1881.

102 Andrew Peterson Diaries, 10/6/1880.

EXISTING CONDITIONS & TREATMENT RECOMMENDATIONS - INTERIOR

FLOORING

The majority of the wood floor appears to be worn, but in fair condition. There is no physical evidence or entries in the Peterson diaries that would indicate that the floors other than the kitchen and the porches had a finish. This poses a challenge for durability and protection of historic fabric which will need to be managed through behavior rather than a physical solution such as a coating or barrier.

There is damage in north east corner of the Parlor that appears to have been caused by a circular saw. There are areas of minor water damage and staining on the floors. It is recommended that the damaged area of the floor in the Parlor be replaced with wood flooring harvested from another, less visible area of the house. We also recommend that the floor be lightly sanded to both return the floor to its 1885 appearance and also to blend the patched flooring with the original.

There are markings on the floor at each doorway that correspond with wood thresholds that remain (not in situ) in the upper hallway of the house. It is hypothesized that all of the doorways had raised, wooden thresholds. Those thresholds should be reinstalled in the instances where they still remain in the house and recreated for those that are missing.

WALLS

There are few walls in the house that expose the original plaster finish. Most plaster has been covered over with gypsum board and painted or wallpapered or covered over with faux-wood paneling. Since the modern wall surfaces obscure the edges of window trim and baseboard, we presume that the gypsum board and faux-wood paneling were installed directly over the plaster and the plaster likely remains in-place.



Figure 77: Parlor, damage to wood floor.



Figure 78: Ghost of Farmhouse threshold, typical condition.



Figure 79: Original wood threshold that is no longer in place.



Figure 80: Room on upper level with wallpaper on the walls.



Figure 81: Baseboard heater and pipe that is exposed in the hallway adjacent to the south door and sidelights.

It is recommended that the existing gypsum board and faux-wood paneling be removed using hand tools and care to not damage adjacent, existing materials. A historical architect should be present during removals to determine the document underlying materials, assess their condition, and determine the appropriate course of action for treatment. The architect should attempt to ascertain the assembly details for the original plaster installation at this time as well as indications of crown moulding, locations of window treatments, etc.

Assuming that plaster remains behind the gypsum board, it is recommended that the plaster be repaired. There are some locations, such as the west wall of the Parlor, where the plaster is gone. In those locations, it is recommended that the plaster and lath be reinstalled.

TRIM

The modern, electrical baseboard heat and addition of gypsum board over the plaster has disturbed the baseboard trim throughout the house. The baseboard trim is no longer attached to the log structure in several locations throughout the house, leaving a gap between the baseboard and the wall. In most cases where the baseboard has come loose from the structure, the baseboard heater remains firmly attached to the baseboard.

- It is recommended that the electric baseboard heater be removed and replaced with a less conspicuous heating system.
- It is recommended that the baseboard trim that is no longer attached to the logs be reattached to the logs during the restoration of the plaster.
- It is recommended that the paint on the baseboard trim be removed. They should then be recoated per the interior paint scheme.

The wainscoting in the kitchen is in good condition. It has many layers of paint on it, but the wood itself

appears to be in good condition. Considering that the layout of the kitchen was different historically than it is today, it is assumed that the wainscoting was originally on all walls in the kitchen during the period of significance except for the wall between the two storage room doorways as that was the location of the cook stove. It is unknown if the wainscoting exists behind the modern-day cabinets. If there is not wainscoting behind the cabinets, it is recommended that the wainscoting be replicated and installed on the east and south wall of the kitchen after the cabinets are removed.

The picture rail that is visible in rooms with exposed plaster may be an indication of picture rails concealed behind gypsum board and faux-wood paneling in other rooms. If revealed, it is recommended that the picture rail paint be analyzed and recorded.

It is recommended that a historical architect be present after the removal of wall coverings to investigate for indications of crown moulding.

CEILING

The existing ceilings throughout the house are in good condition. There are many layers of paint on the bead board, but the wood itself appears to be in good repair and firmly attached.

It is recommended that the layers and order of construction specifically with respect to the ceilings be documented during rehabilitation of the building to confirm this assumption. Paint analysis was not completed on the ceilings because of the presence hazardous materials. It is recommended that a ceiling board be removed so that paint analysis can be accomplished in a manner safer than in-situ.

COATINGS

It is recommended that an historical architect be present to document the paint layers on historic surfaces during rehabilitation of the building. In the meantime, it is recommended that paint not be



Figure 82: Parlor, camera facing northwest.



Figure 83: Exposed wires on southwest of farmhouse exterior.



Figure 84: Ceiling detail at doorway to kitchen.



Figure 85: Photograph of the interior of the Pierre Bottineau house, showing the simplicity of the finishes that were used in the mid to late 1800s for farmhouses.

removed from any historic fabric. It is likely that the paint from the period of significance will contain lead. Safety precautions should be taken during analysis and subsequent treatment.

If a comprehensive interior paint scheme cannot be determined from the newly exposed historical surfaces and Peterson's records, it is recommended that the interior walls and wood trim be treated with two coats of whitewash. This was an early finish, though perhaps not the finish concurrent with the 1881 kitchen addition. In order to achieve a historically appropriate restoration of the window trim, the existing layers of paint and whitewash need to be removed to the historic whitewash. This may prove to be difficult due to the fragile nature of that coating. If that is the case, removal of the whitewash is acceptable.

BUILDING SYSTEMS

Refer to the following sections "Considerations for Rehabilitation" and "Considerations for Temporary Inhabitation".

CONSIDERATIONS FOR REHABILITATION

CCHS proposes to rehabilitate the farmhouse with the main floor open to the public, interpreted to 1885. The upper floor would be used for offices and not open to the public. The building systems (mechanical, electrical, and plumbing) and the structure are significantly impacted by these uses in the building. The recommendations that follow accommodate this new program within the farmhouse.



Figure 86: Farmhouse and the Peterson family, 1885.

BUILDING SYSTEMS

The mechanical, electrical, and plumbing needs for the house should be specifically designed so as to minimize their appearance. Ideally, these building systems should be located in places that are either invisible to visitors on the first floor or all in one area where their presence can be marked and interpreted with programing. It is recommended that exterior conduit and equipment be removed from the facades and relocated to an area that is not visible to the public.

The baseboard heat is not original or appropriate for the rehabilitation of this building. We recommend replacing the baseboard heaters with a less visually intrusive heating system. We caution that the design of a new heating system needs to be a collaborative effort between a mechanical engineer with experience working with historically significant buildings and a historical architect. Since CCHS intends to have only the main floor of the house open to the public, it may be a viable solution to install building systems equipment on the upper floor and basement levels of the house, penetrating through the floor or ceiling to serve the main level in an unobtrusive manner.



Figure 87: Chimney shaft in an upstairs bedroom, above the parlor chimney.

Based on existing physical evidence and written evidence in the Andrew Peterson diaries, the final rehabilitation of the spaces open to the public and interpreted to 1885 would include reconstruction of the original brick chimneys and reinstallation of wood stoves in the parlor, north bedroom, and



Figure 88: End of baseboard heater and loose electrical outlet on south wall of parlor.

kitchen with exposed stove pipes from the stove to the chimney.

It is recommended that the existing gypsum board over the Parlor chimney be removed using hand tools and care to not damage the underlying brick and adjacent, existing materials. A historical architect should be present during removals to document the underlying materials, assess their condition, and direct future treatment. The architect should attempt to ascertain the location of historic openings and the scope of masonry restoration required at this time.

The current electrical system is not original or appropriate for the rehabilitation of the building. It is recommended that the current electrical system, including light switches, receptacles, and light fixtures be removed. The design of a new electrical system needs to be a collaborative effort between an electrical engineer with experience working with historically significant buildings and a historical architect. In order to fulfill CCHS's program for the building, electrical service will be required. Receptacles and lighting should be designed to be as visually unobtrusive as possible and so as not to convey a false sense of history.



Figure 89: Exposed pipe and hole in ceiling in main level bathroom.

The current plumbing system is not original or appropriate to the rehabilitation of the building. It is recommended that the toilet room on the first floor be demolished and the space be returned to a bedroom for interpretation to 1885 or as a space CCHS uses to share their educational programming with visitors. It is recommended that the toilet room on the second floor also be removed, if possible. The plumbing required for a toilet room on the second floor would extend down to the basement (through the first floor) for the supply lines and sewer line, as well as up through the attic floor and through the roof (visible from the exterior) for the vent stack. If it is not viable to have a office spaces without a toilet room in the building, it may be the least visually intrusive to locate a toilet room in the

basement of the house. Depending on the location of the toilet room, it may be possible to conceal the necessary plumbing in one of the chimneys.

STRUCTURAL SYSTEMS

According to the structural assessments conducted during this study, some reinforcement of the structure is necessary to bring the live load capacity up to the Minnesota State Building Code requirements before the house is occupied. Refer to the structural assessment for the farmhouse in this section for more details. This section will focus on the information provided in the structural assessment and the impacts those limitations could have on the future use of the building.

The first floor of the 1867 portion of the house has an assumed structural capacity for a live load of 100 pounds per square foot, however, the timber beam supporting the floor has a capacity for only 40 pounds per square foot. This is sufficient for residential use, but under-structured for the assembly use CCHS desires. The solution provided by the structural engineer to add a post in the basement is one that will sufficiently reinforce the floor while maintaining the historic integrity of the house.

The first floor of the 1881 portion of the house is under-structured for both residential and assembly use, with a load capacity of only 30 pounds per square foot. The solution to add a post in the basement under the kitchen will not impact the historic integrity of the house.

The second floor has an assumed structural capacity for a live load of 40 pounds per square foot in addition to the dead load of the existing floor, framing, and finishes. The second floor has historically served as single-family, residential bedrooms, which is well-suited to the capacity of the structure. CCHS desires to occupy the second floor of the farmhouse with offices, which would require a greater load capacity of the structure in order to meet building code requirements. In order to achieve a great load capacity, the structure needs to be reinforced, either with more columns or with deeper and/or more frequent beams. A structural engineer with experience working with historic buildings and a historical architect should work together to design the necessary reinforcing while maintaining the historic integrity of the first-floor space.

The attic floor has a structural capacity for a live load of 20 pounds per square foot in addition to the dead load of the floor itself. The attic is not currently occupied or used for storage. It is recommended that it remain empty and unused.

CONSIDERATIONS FOR TEMPORARY INHABITATION

Before the house is restored, it will be used temporarily as a residence. CCHS desires people living on-site for security purposes, but having a modern family occupy a historically significant house from 1870 poses some challenges. The work done to prepare the house for occupancy should not negatively impact the historic integrity of the house. Surfaces should be left as they are until they are restored (see Restoration recommendations above). Floors should be maintained free of sand and debris (to avoid scratches), covered with rugs (for protection), and care should be taken to avoid marking floors (soft-soled shoes or slippers only indoors, furniture leg protectors on all furniture, etc).

During this time, we recommend sharing this report, or at least this section of the report, with the future resident. For simplicity, it is recommended that the future resident of the house treat the house like a highly-restricted apartment – no painting, no making holes in any surface, and no modifications of any sort. This is difficult when there are already holes, mismatched paint, and worn surfaces. Some of these items hold clues to historic uses and answers to questions of restoration appropriateness. While the authors of this report have tried to collect and document many of those clues in this report, there are far more clues to collect behind paneling, gypsum board, and other obstacles that won't be fully removed until the restoration is set to commence.

The biggest challenge will be avoiding moisture and water. Humidity in the kitchen and the bathrooms should be effectively evacuated from the house. Wet clothes, boots, etc. should not be left on the wood floors. Any damage to the exterior cladding, roofing, plumbing, etc should be called to the attention of the owner immediately.

While the reuse of this house as a house will be challenging given its current state and its future intended use, the opportunities for the owner and the occupant are likely worth the sacrifices.

STRUCTURAL ASSESSMENT

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

Building Assessment

The Farmhouse is a timber and masonry framed structure with a 2-story wing at the south, called the main house, and a one-story wing to the north called the north addition. There is a basement below both wings. The main house has a one-story porch at the south, the north addition has a one-story porch at the east. Each porch has a crawl space below the porch floor.

Two Story Main House

The main house appears to be the original farmhouse structure. There is a one story enclosed porch at the south side of the building. The porch appears to have been modified from the original; the roof configuration has been changed and the original open porch has been enclosed. The main house has a basement below the building footprint, the porch has a crawl space below the first floor.

Roof Framing

Description

The roof is a gable configuration with the ridge extending east to west. The roof is framed with rough-hewn rafters, approximately 4 ½" diameter spaced approximately 25" to 26" on center. The roof sheathing is rough cut 1x planking. The rafters form an approximate 9:12 pitch roof and meet at the ridge. There is no ridge beam or ridge board. The roof covering is metal.

Condition

The roof framing appears to be in good to very good condition. There is only slight evidence of water leakage around the chimney penetration at the center of the roof. The remainder of the roof rafters and deck boards appear sound, solid and performing properly.

Analysis

Calculations indicate that the roof framing will be adequate to support the dead and snow loads required by the Minnesota State Building Code.

Attic Floor

Description

The attic floor, which forms the ceiling of the second floor, consists of 5 ½" x 7 ¼" timbers spaced approximately 30" on center. The floor of the attic space is sheathed with rough sawn planks. The dimension from the attic floor to the roof ridge is approximately 86". The gable endwalls at the attic are framed with wood studs sheathed with rough sawn planks.

Condition

The attic floor framing was covered by sheathing and ceiling plaster in nearly all observable areas. However there did not appear to be any substantial deflection, disruption or unusual conditions observed that would be considered evidence of a deficiency. The attic floor and gable end walls did not exhibit any evidence of water penetration or damage. The attic floor is judged to be in good condition and performing adequately.

Analysis

Calculations indicate that the attic floor will have the capacity to support a live load, in addition to the dead weight of the floor system, of 20 psf. The floor currently is not accessible and is not used for any type of occupancy.

Second Floor

Description

The second-floor framing could only be observed at one location, but it appears that the second floor is framed with 7" (+/-) deep purlins and are assumed to be similar to the first-floor purlins which were found to be 7" deep by 9" wide. Spacing of the second-floor purlins could not be confirmed with any certainty, but the nailing pattern on the floor likely coincides with the purlin location. The measured spacing of the nail lines was found to be 26" to 30" on center. The purlins span north to south resting on the perimeter walls and interior partition walls.

Condition

The second-floor framing was covered by sheathing and ceiling plaster in nearly all observable areas. However there did not appear to be any substantial deflection, disruption or unusual conditions observed that would be considered evidence of a deficiency. The floor did not exhibit any evidence of water penetration or damage. The second floor is judged to be in good condition and performing adequately.

Analysis
The second-floor framing has the capacity to support a 40 psf live load, in addition to the dead weight of the framing and finishes. This is based on the assumed member size and spacing. A 40 psf live load capacity meets the building code requirements for residential use. Use as office space or public occupancy would require reinforcement or enhancement of the structure.

First Floor
Description
The first-floor framing could be observed within the basement level where no finished ceiling existed. The floor purlins were 7" deep x 9" wide rough-hewn timbers. Floor sheathing over the purlins consisted of 1" x 5 ½" boards. The purlins vary in spacing from 26" to 30" on center and span north to south, bearing on the sill over the foundation walls and on a beam line located approximately mid-span of the purlins. The beam consists of a 7" deep x 10" wide rough-hewn timber supported by four timber columns. The timber columns supporting the beam were approximately 8" x 8" in size and rest on stone plinths over the basement floor. It is assumed that a stone or concrete footing existed below the columns but could not be confirmed.

Condition
The floor framing appears to be in good condition with little evidence of damaged or deteriorated members. The beam supporting the purlins exhibits somewhat excessive deflection between supporting columns but appears in good condition. The columns supporting the center beam are observed to be in good condition. One timber column exhibits a large vertical crack, but this is judged to be a natural defect, common in wood members and does not threaten its ability to support the necessary loads.

Analysis
The first-floor purlins can support a live load, in addition to the dead weight of the framing and floor finish, of 100 psf. This live load capacity will meet the building code requirements for occupancy as public assembly.

The timber beam supporting the purlins in the center of the basement has a calculated live load capacity of 40 psf in its current configuration. This capacity would meet the building code requirements for residential occupancy. If the first-floor space is to be occupied as office space or public assembly one additional support column will be required in the basement to divide the larger 11 ft. span into two shorter spans.

Above Grade Perimeter Walls

Description

The exterior perimeter walls of the main house appear to be "log framed" solid stacked timbers. The log framed walls are assumed to extend from the top of the masonry foundation walls to the ceiling of the second floor. The interior partition walls are stud framed walls with lath and plaster or more recently applied sheetrock. The interior walls are assumed to be non-bearing walls although the wall separating the northwest bedroom and the bath is likely acting to transfer attic and second floor loads to the floor framing below. The log framed perimeter walls support the roof and second floor framing.

Condition

All of the perimeter walls are covered with plaster finish at the interior face and vertical tongue and groove siding at the exterior face. None of the wall framing could be directly observed however, small openings in the exterior siding allowed occasional probing of the timber members. Probing was performed at the base of the wall, occasionally approximately 24" above the base of the wall and immediately below the first-floor window sills. Soft timber, likely rotted as a result of water penetration was found at the following locations:

- At the base of the wall at the northeast building corner. This extended approximately 16" to 20" above the foundation level.
- At the base of the wall in the vicinity of the southeast corner where the wall meets the south porch. This damage appeared to be limited to the lower 12" of the wall.
- At the base of the wall at the southwest corner of the building. This damage appeared to be limited to the lower 8" to 12".

At this time, the effects of any deterioration in the log framed walls has not presented itself in the attached finishes. The interior plaster and sheetrock finishes are intact and do not exhibit crushing, bowing or cracking. The exterior siding, while also exhibiting modest rotting deterioration at the lower extremities, appears intact and sound. However, if left unattended, the rotting of the timber members will eventually have an adverse effect on the stability and load carrying capacity of the walls. This condition should be treated in the near future.

Foundation Walls

Description

The foundation walls for the main house are constructed with rubble limestone. The walls are of a thickness and configuration that would imply that the basement level may have been dug out from a previous

crawl space under the first floor after the building and the perimeter shallow footings were already in place. The basement floor appears to be constructed with brick pavers covered with a concrete topping.

Condition
The foundation walls are judged to be in good to very good condition and appear to be supporting the framing above adequately. There is one location at the east wall where stone has been removed and dislodged, likely for installation or repair of a utility line entering the building from the exterior. This location should be repaired. The remainder of the foundation walls appear solid, intact and stable. There is no evidence of settlement, differential settlement, bowing or excessive cracking.

Porch Framing

Description
The floor and roof framing for the porch at the south side of the main house is hidden from direct observation by sheathing and finish materials. The roof is assumed to be constructed with dimension lumber rafters and ceiling joists. The porch floor framing can be observed to a limited degree through a small vent opening into the crawl space. The floor joists are 2x dimension lumber spanning east to west and are supported by several shallow timber beams that are resting on stone plinths. It is likely that the stone plinths rest directly on the soil and do not have footings placed below them. The floor of the porch consists of board sheathing. The crawl space below the porch is quite shallow, with the soil approximately 6" to 10" below the bottom of the floor framing.

Condition
The porch framing members could not be directly observed, except for a small visible area into the crawl space below the floor. However, the framing appears to be solid, sound and there is no evidence of damage, deterioration or a serious deficiency. Based on past experience with similar structures, it is possible that some minor deterioration has occurred in the roof sheathing and in the roof framing, particularly where that framing meets the main building walls. The floor framing over the shallow crawl space may also have experienced some minor deterioration, particularly any wood framing on concrete or in contact with the soil. While there is no evidence that these conditions occurred to a degree that threatens the porch framing, the wood members should be inspected more closely when there is an opportunity to remove parts of the ceiling, roof and floor sheathing.

Analysis
No analysis was performed on the roof or floor framing for this structure. However, the framing appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

One Story North Addition
The one story north addition appears to have been added after construction of the main house. The porch at the east side of the addition also appears to have been a later addition. There is a basement space below the north addition. The porch at the east elevation has a crawl space below the porch floor.

Roof Framing
Description
The roof of the north wing is constructed with rough cut 2x6 rafters and 1x board sheathing. This roof is a gable configuration with the ridge extending north to south. It appears that the east facing slope of the roof was modified and raised slightly to accommodate the east porch addition. The masonry gable end walls at the north elevation were extended upward and brick masonry was added to accommodate the revised pitch of the east slope.

Condition
The roof framing could be observed to a limited extent through an access opening in the north gable end. The roof framing and roof sheathing appears to be in good to very good condition. There is no evidence of a serious water penetration through the roof and no evidence of a deficiency or damage to the roof framing members.

Analysis
Calculations indicate that the roof framing will be adequate to support the dead and snow loads required by the Minnesota State Building Code.

First Floor
Description
The first-floor framing could be observed within the basement level where no finished ceiling existed. The floor joists were 2x8 dimension lumber spaced 19″ on center. The joists span approximately 13 ft. from west to east and bear on the stone foundation walls.

Condition
The floor framing appeared to be in good condition with little evidence

of damaged or deteriorated members. The joists appeared solid and sound. The deflection of the joists is slightly excessive but not a concern.

Analysis
The first-floor joists can support a live load, in addition to the dead weight of the framing and floor finish, of 30 psf. This live load capacity does not meet the building code requirements for occupancy for a residential use.

The addition of a new supporting member at approximately the midspan of the joists increases the live load capacity considerably. The addition of a new beam line down the center of the basement area will allow a live load capacity exceeding 100 psf. This live load capacity would allow use of the space for nearly all types of occupancy including public assembly.

Above Grade Perimeter Walls

Description
The exterior walls of the north wing at the west and north elevations consist of brick masonry veneer over wood stud framed walls. The wall between the kitchen and porch is covered with finish materials, but is assumed to be a continuation of the brick veneer/wood stud construction. The north and east walls of the porch appear to be dimension lumber framed.

Condition
The brick masonry veneer is generally in good condition. There are isolated areas of mortar erosion, dislodged and damaged brick. The conditions of damage occur at the base of the wall, near grade level and at the building corners. Repair of the damaged and deteriorated brick veneer should be undertaken within the next two years. General review and repointing of exterior brick masonry should be undertaken approximately every 10 years.

The lumber framed walls of the porch addition could not be directly observed. There was no visible evidence of damage, deterioration, bowing or displacement that might indicate a deficiency.

Foundation Walls

Description
The foundation walls for basement area below the north addition are constructed with rubble limestone. The basement floor is a poured concrete slab on grade.

Condition
The foundation walls are judged to be in good to very good condition and appear to be supporting the framing above adequately. The foundation walls appear solid, intact and stable. There is no evidence of settlement, differential settlement, bowing or excessive cracking.

Porch Framing

Description
The porch at the east elevation is enclosed and all framing was hidden from direct observation by sheathing and finish materials. The roof is assumed to be a continuation of the north addition roof rafters. The porch floor is assumed to be constructed with dimension lumber joists similar to the interior floor framing. The floor of the porch is overlain with plywood sheathing. There is a crawl space below the porch with the soil likely only 6" to 8" below the bottom of the floor framing. Due to the stiffness and solid feel of the floor it is likely that intermediate support elements exist located between the exterior wall of the porch and the east wall of the kitchen.

Condition
The porch framing members could not be directly observed, however, the framing appears to be solid, sound and there is no evidence of damage, deterioration or a serious deficiency. Based on past experience with similar structures, it is possible that the floor framing over the shallow crawl space may have experienced some minor deterioration, particularly any wood framing on concrete or in contact with the soil. While there is no evidence that these conditions occurred to a degree that threatens the porch framing, the wood members should be inspected more closely when there is an opportunity to remove parts of the floor sheathing.

Analysis
No analysis was performed on the roof or floor framing for this structure. However, the framing appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

Items or Areas of Concern

Roof of the Two-Story South Wing

Inspect and repair, if necessary, flashing and waterproofing around the masonry chimney that penetrates the roof deck.

Time frame for this work: Within one year.

Basement of the Main House

Provide one new timber support post under the existing beam in the basement area. Provide a new 6x6 timber post midway between existing posts at the east span of the beam and set over a 10″ deep by 18″ x 18″ concrete footing. Provide a precast concrete plinth over the footing to keep the timber at least 8″ above floor level.

Time frame for this work: Prior to any use of the first floor for other than residential occupancy.

Exterior Walls of the Main House

Remove the existing skirt board at the base of the wall to expose the lower portions of the log framed walls at all wall areas. Inspect the condition and extent of any discovered deterioration. Cut out severely damaged members and replace with new timber. Treat moderately damaged members with consolidant and filler.

Time frame for this work: Within one year.

Foundation Walls of the Main House

Repair dislodged and damaged stone at the east foundation wall where a utility line penetrates the wall.

Time frame for this work: Within one year.

Roof and Floor Framing for the South Porch

Remove interior or exterior finishes and sheathing to allow inspection and repair, if necessary, of roof and floor framing. During repair work, inspect and repair if necessary, foundation walls supporting the porch framing.

Time frame for this work: When the opportunity first presents itself to undertake this work but within at least 5 years.

Basement of the North Addition

Provide a new 3-2x8 lumber beam under the existing floor joists at approximately mid span of the existing joists. Support the beam at each end on the existing north and south foundation walls. Provide 2 additional 6x6 posts, equally spaced along the span of the new beam. Provide new 10″ deep x 16″ x 16″ footings below each post. Provide a precast concrete plinth over the footing to keep the timber posts at least 8″ above floor level.

Time frame for this work: Prior to the use of the first floor for any permanent occupancy.

Exterior Brick Walls of the North Addition
Repoint eroded mortar and replace damaged, missing or dislodged brick units at the west and north walls.

Time frame for this work: Within 1 year.

Roof and Floor Framing for the East Porch
Remove interior or exterior finishes and sheathing to allow inspection and repair, if necessary, of roof and floor framing. During repair work, inspect and repair if necessary, foundation walls supporting the porch framing.

Time frame for this work: When the opportunity first presents itself to undertake this work but within at least 5 years.

Maintenance Considerations

Roof Areas
Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work: Every 5 years.

Foundation Walls
Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

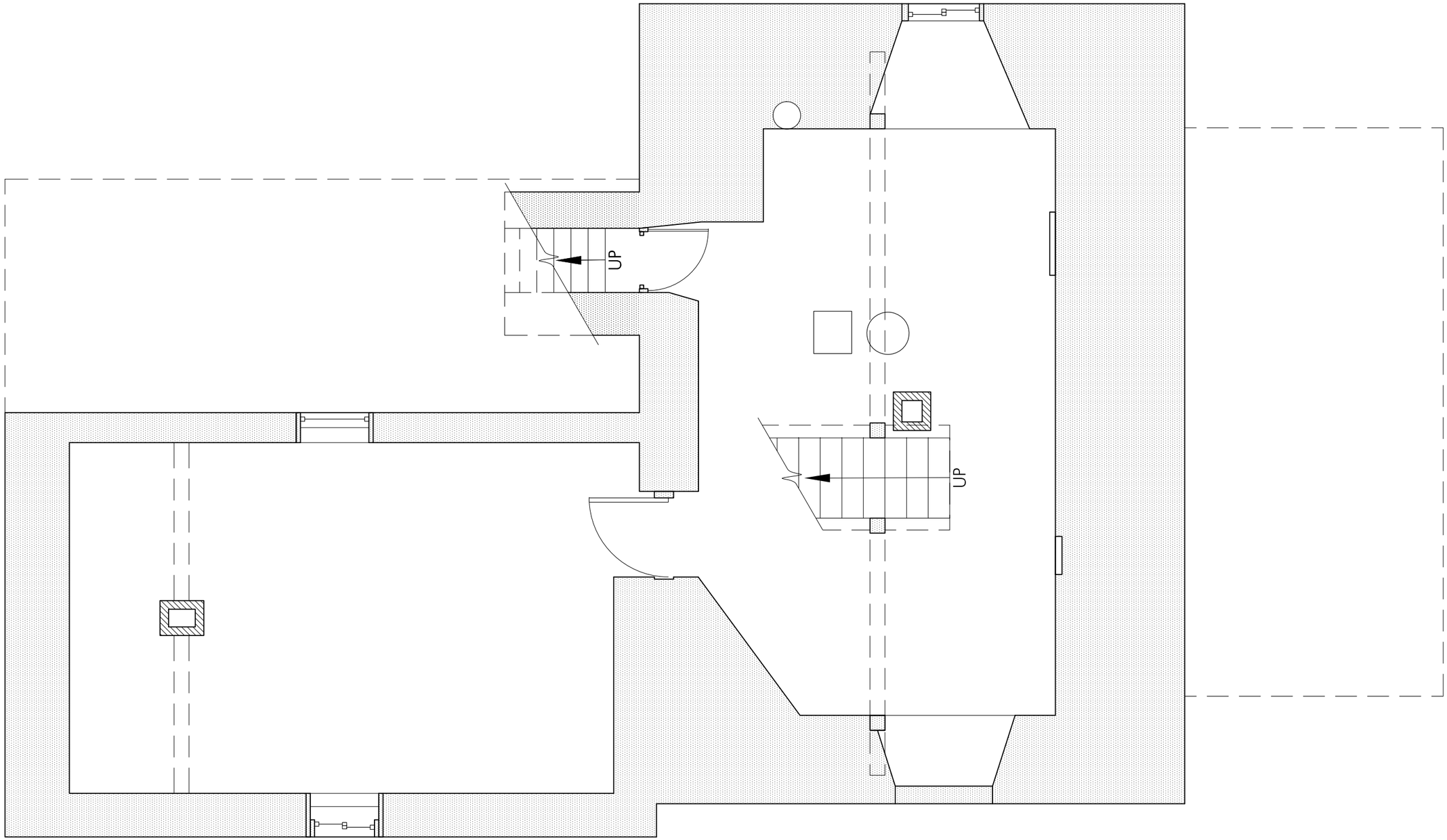
Time frame for this work: Every 10 years.

Exterior Brick Masonry Walls
Periodically inspect and repair, if necessary, brick masonry veneer. Repoint eroded mortar, re-place dislodged or loose brick.

Time frame for this work: Every 10 years.

Summary

In general, the Farmhouse was found to be in good to very good condition. The original framing appears to be intact in most of the spaces and appears to be performing adequately. Isolated areas of damage or deterioration were noted and recommendations for repairs and a suggested time frame for addressing these issues is provided. The structure has performed well in the past and with attention to the specific concerns noted above and with continued proper maintenance the structure should continue to perform adequately well into the future. The Garage structure will require considerable reinforcement and reconstruction. The cost of repairs may well exceed the value of the structure.



1 | EXISTING BASEMENT FLOOR PLAN

1.1 | 1/4"=1'-0"

0 1 2 4

DATE 12.20.2017

DRAWN MacDonald & Mack Architects

N

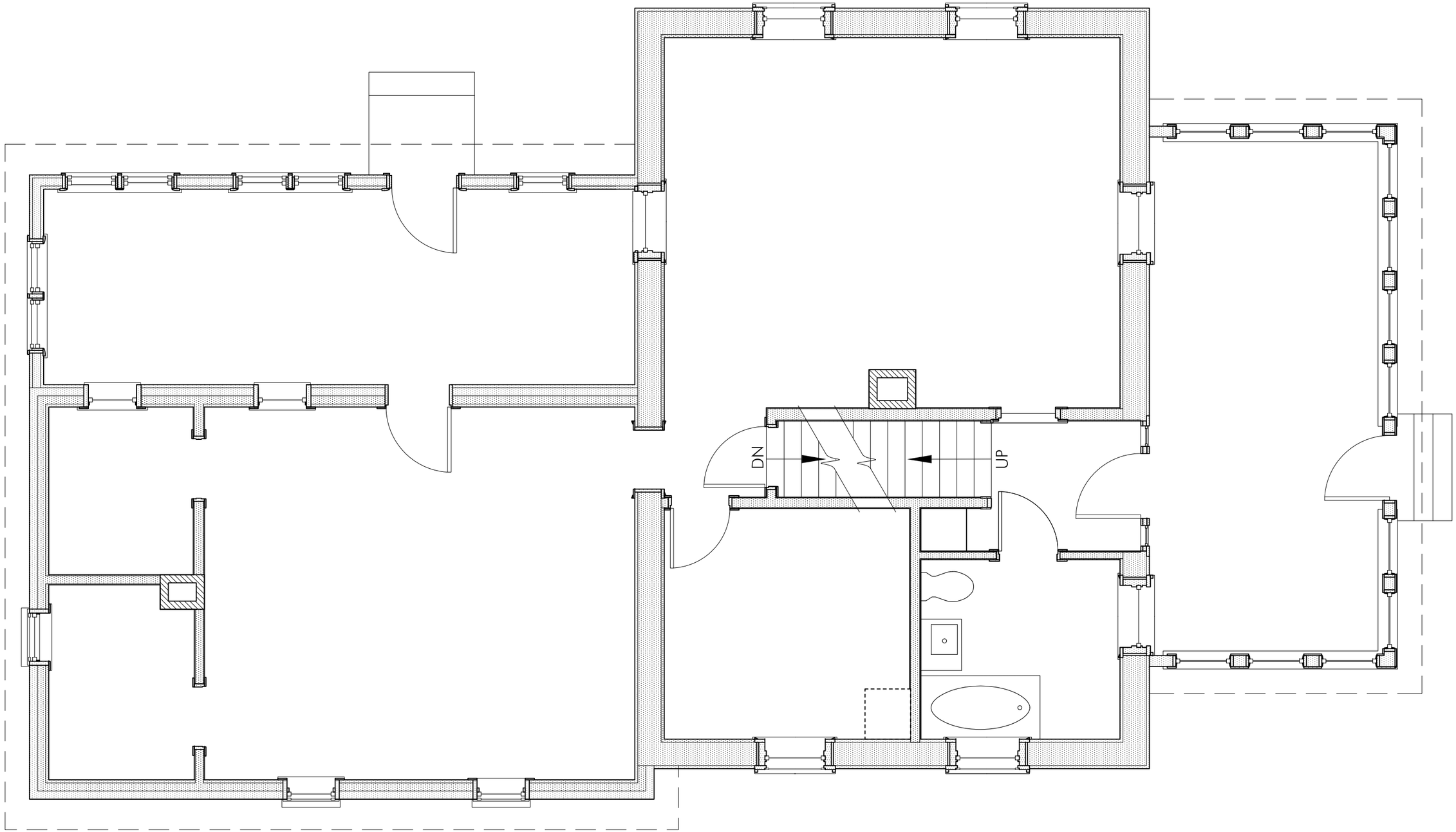
Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

FARMHOUSE

EXISTING FLOOR PLAN

1.1



1 | EXISTING FIRST FLOOR PLAN

1.2 | 1/4"=1'-0"

0 1 2 4

DATE 12.20.2017

DRAWN MacDonald & Mack Architects

N

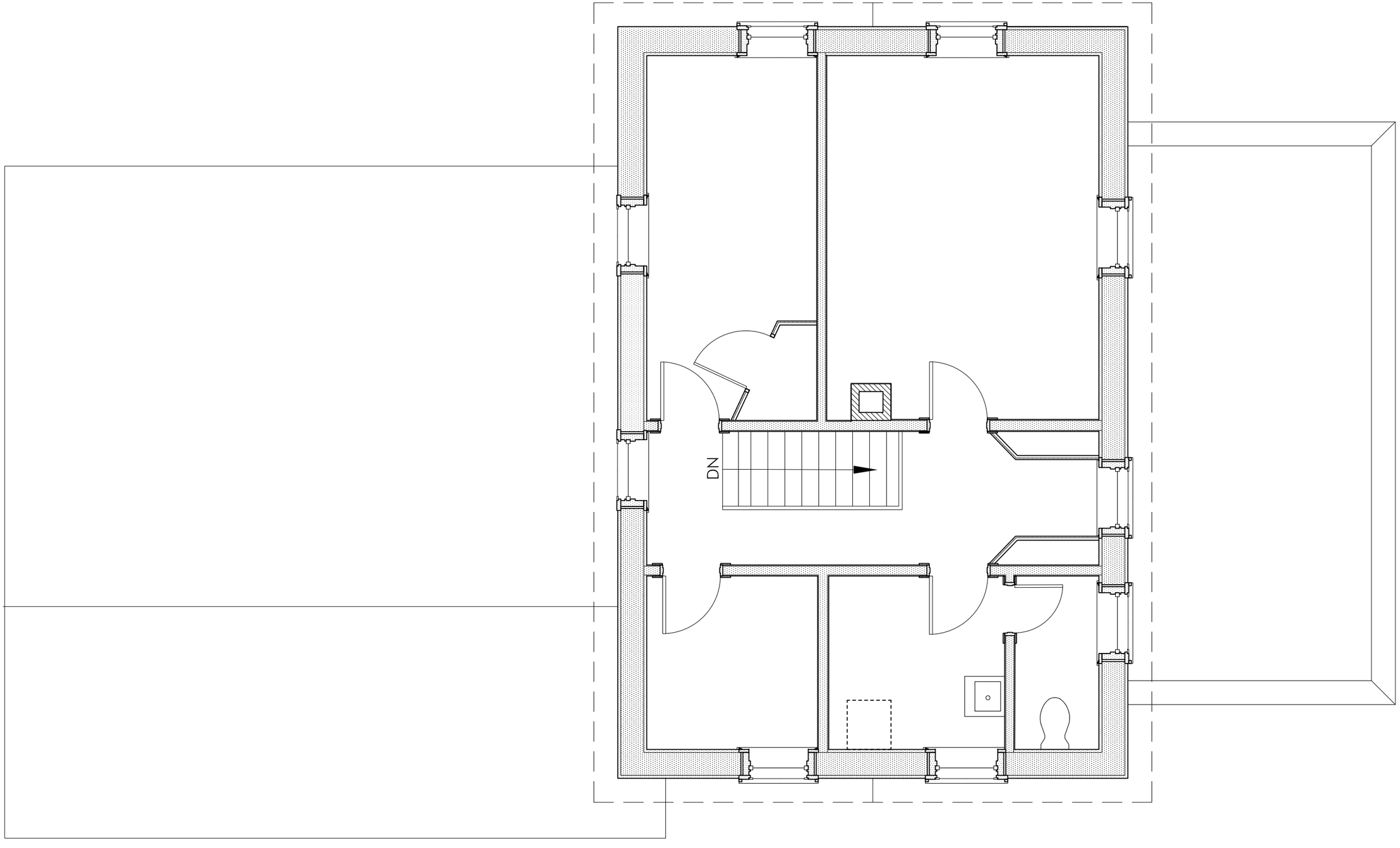
Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

FARMHOUSE

EXISTING FLOOR PLAN

1.2



1 | EXISTING SECOND FLOOR PLAN

1.3 | 1/4"=1'-0"

0 1 2 4

Andrew Peterson Farmstead HSR
Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

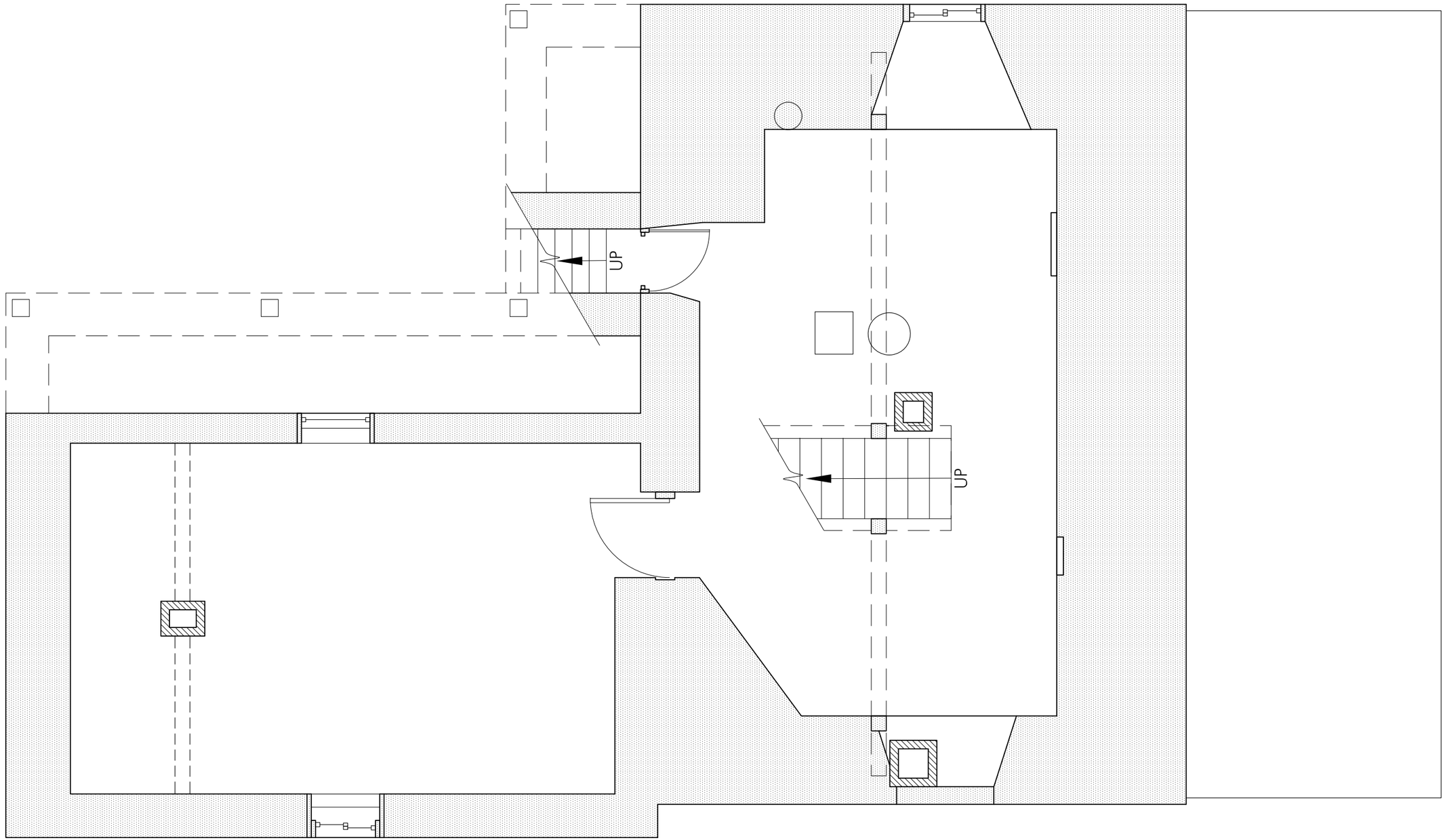
FARMHOUSE

EXISTING FLOOR PLAN

1.3

DATE 12.20.2017
DRAWN MacDonald & Mack Architects

N



1 | CONJECTURAL BASEMENT FLOOR PLAN

1.4 | 1/4"=1'-0"

0 1 2 4

DATE 12.20.2017

DRAWN MacDonald & Mack Architects

N

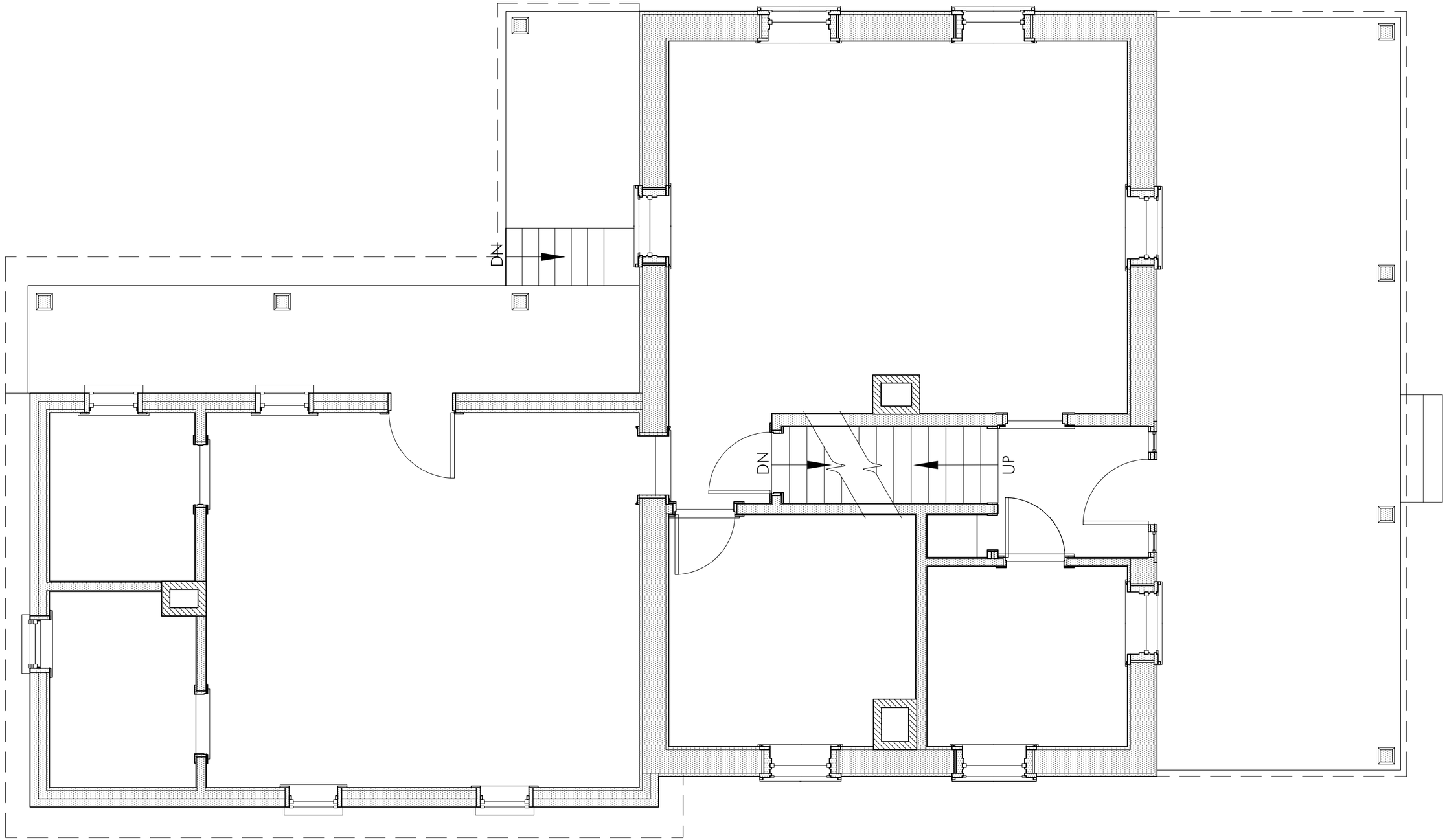
Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

FARMHOUSE

CONJECTURAL FLOOR PLAN

1.4



1 | CONJECTURAL FIRST FLOOR PLAN

1.5 | 1/4"=1'-0"

0 1 2 4

DATE 12.20.2017

DRAWN MacDonald & Mack Architects

N

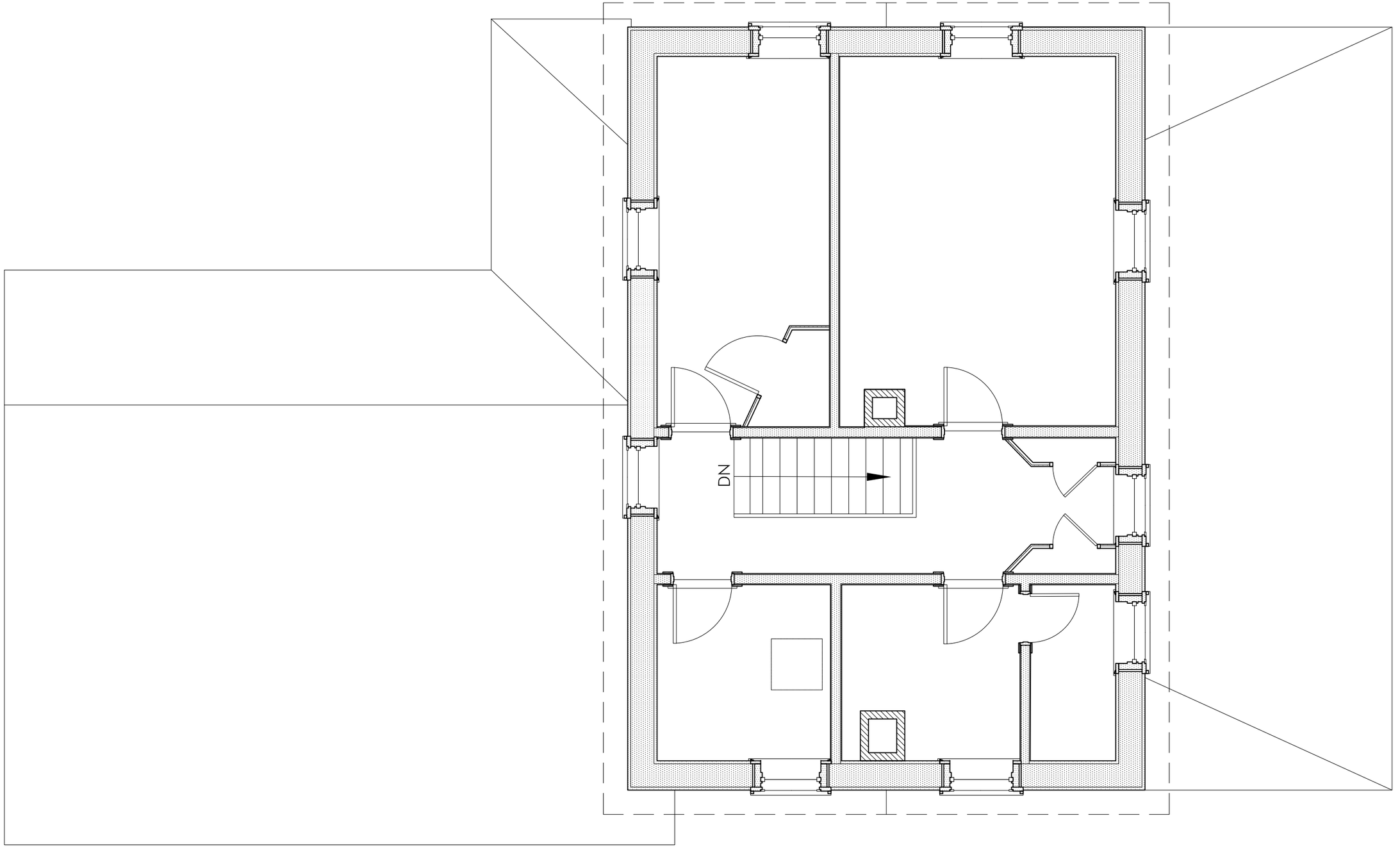
Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

FARMHOUSE

CONJECTURAL FLOOR PLAN

1.5



1 | CONJECTURAL SECOND FLOOR PLAN

1.6 | 1/4"=1'-0"

0 1 2 4

DATE 12.20.2017

DRAWN MacDonald & Mack Architects

N

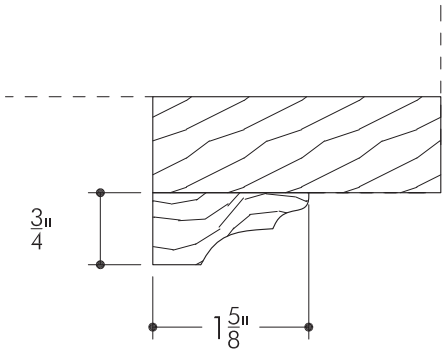
Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

FARMHOUSE

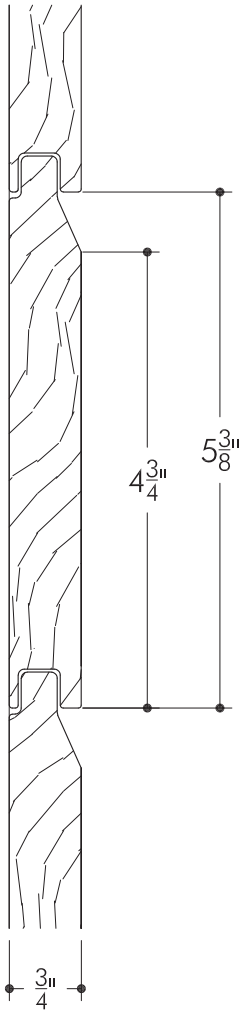
CONJECTURAL FLOOR PLAN

1.6



1 | WINDOW & DOOR TRIM DETAIL

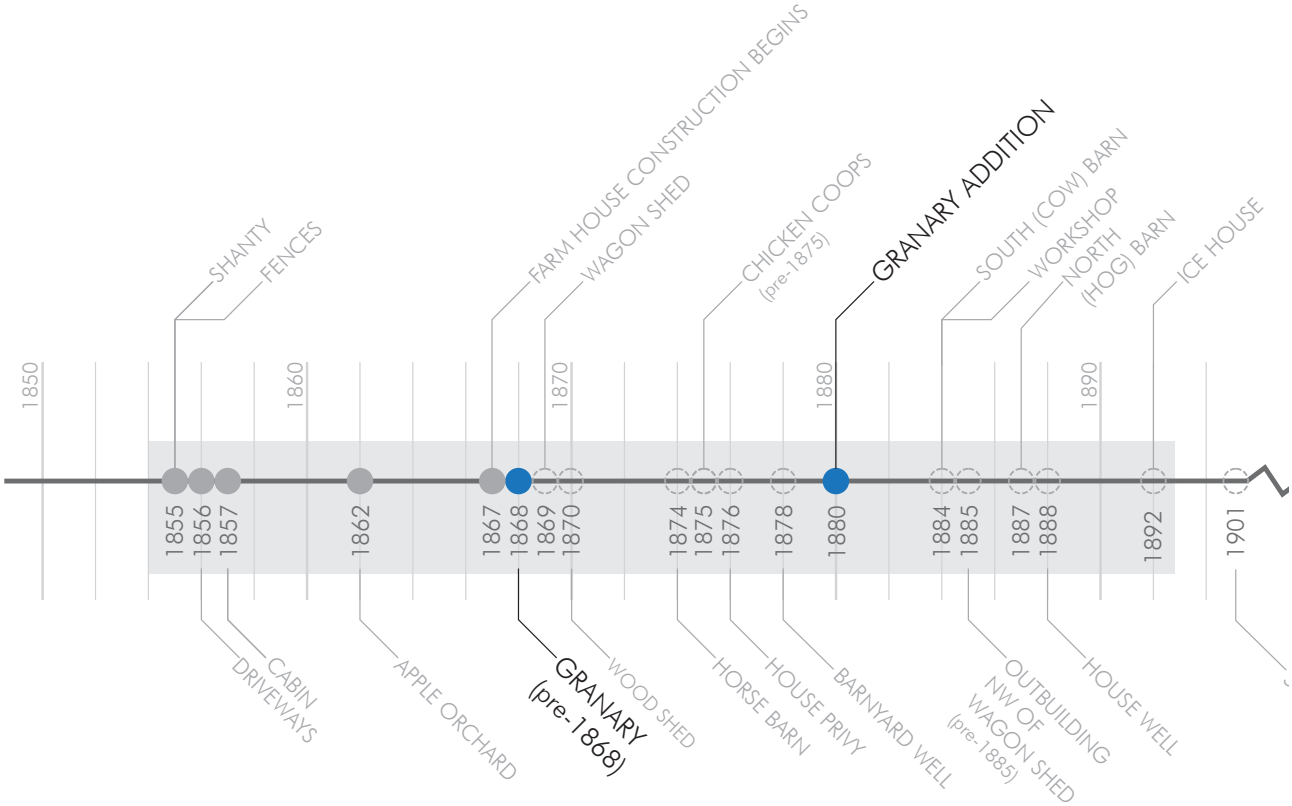
1.7 | 6"=1'-0"



2 | SIDING DETAIL

1.7 | 6"=1'-0"

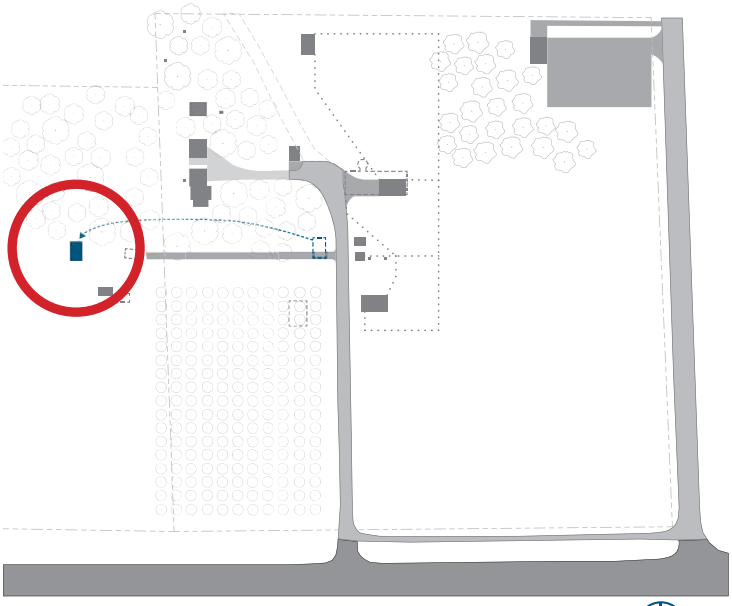



1850
1860
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1880
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1862
1867
1868
1869
1870
1874
1875
1876
1878
1880
1884
1885
1887
1888
1892
1901
SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
GRANARY ADDITION
SOUTH (COW) BARN
WORKSHOP
NORTH
(HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

GRANARY

"Raised the granary and put stone pillars under it."
-August 23, 1871

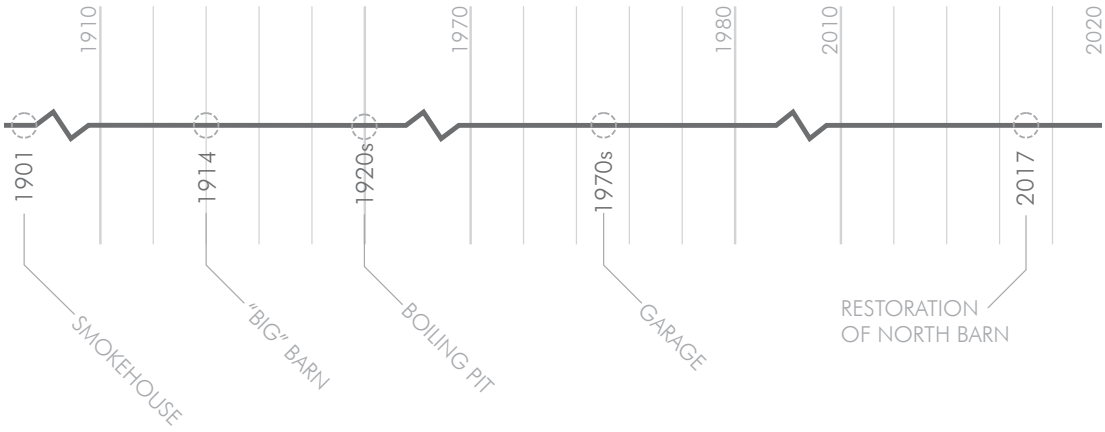




Site Plan (no scale)



Figure 90: South facade of the Granary.



THE GRANARY, PRE-1868 WITH 1880 ADDITION

Condition: Existing, relocated
Proposed treatment: Restoration, requires relocation
Contributing to Historic District: Yes

Historical Context for Granaries

By Rolf Anderson

A granary is a structure built specifically for the storage of field crops, usually small grains, shelled corn, or soybeans. Granaries allowed farmers to store crops outside of the barn. In addition to providing more ideal storage conditions, granaries that were separated from the barn reduced the danger that the entire crop would be lost if the barn caught fire, which was a common occurrence. Granaries were used to store crops before they were fed to livestock or taken to market. Being able to store grain without spoilage and to sell it when market prices were favorable freed farmers from being tied to immediate market prices.

Granaries were usually sited in locations that were well-drained, easily accessible by wagons and other equipment, not too far from fields, and near livestock feeding areas. Regardless of their size and materials, it was important that granaries were strong, well-braced, and balanced to provide stability against the weight of the crops. Wheat was the heaviest grain, exerting the most pressure on the walls and floor. Granaries had to keep out vermin but they also needed to be well-ventilated to keep the grain dry. Many granaries had vent shafts, louvers or ventilators to encourage air flow. Floors were often raised above the ground. Sometimes granaries had multiple storage bins. Small hatch doors in the upper walls were used for filling the bins. Perhaps the most distinctive feature of a granary was the elevation of the building on several short piers of wood, stone, or cement block.[103]

Based on Andrew Peterson's first reference about the granary, which is dated August 21, 1868, the building already existed at that time. On August 23, 1871, Peterson noted, "Raised the granary and put stone pillars under it." On April 1, 1880, he discusses the planned addition to the granary: "We dovetailed the timber that I am going to use for the new granary that is to be built along side of the old." On August 25, 1890, Peterson installed a lock on the granary door. In his last entry about the granary dated June 13, 1894, he stated he painted the granary.

103 Granger, 6.233-6.236.

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries

Andrew Peterson described daubing his Granary in 1868[104], indicating it was constructed prior to 1868, perhaps concurrently with the construction of the Farmhouse which began in 1867. This also indicates that Peterson's Granary in 1868 was of log construction. Subsequent diary entries describe annual daubing to support that supposition.

Peterson described putting corner boards on the pre-1868 Granary[105], perhaps to protect the ends of the logs at the corner joints. The original Granary was supported by stone pillars.[106] He further described the interior as having a stair, several bins, and a plaster finish on either the interior, the exterior, or both.[107]

In the spring of 1880, he described harvesting and hewing timber "for the new granary that is to be built along side of the old."[108] He described jacking up the old granary as well as nailing shingles to the roof and siding with strips (likely battens) to the exterior.[109] As a part of this construction, he described constructing grain bins, stairs, and plaster finish (without indication to the location of plastering).[110] He further described that the structure had windows and one exterior door, with perhaps another door inside.[111]



Figure 91: East facade of the Granary.



Figure 92: North facade of the Granary.



Figure 93: West facade of the Granary.

104 Ibid, August 21, 1868.

105 Ibid, December 1, 1870.

106 Ibid, August 23, 1871.

107 Ibid, August 28, 1871 and May 8, 1876.

108 Ibid, April 1, 1880.

109 Ibid, June 22, 1880, July 2, 1880, and September 15, 1880.

110 Ibid, August 28, 1886, September 4, 1886, and February 2 and 6, 1890.

111 Ibid, March 17 and 24, 1890.



Figure 94: Photograph of the Granary loft taken from the stairs, camera facing north.



Figure 95: View of the Granary interior.

Description Based on Physical Evidence

Although the Granary was called the "log house" in the Andrew Peterson Farmstead National Register Nomination,[112] it has not been confirmed that it was ever used as a dwelling. The reason it was called a house is likely due to its construction method. Unlike other auxiliary structures existing on site, its northern section is constructed out of square-hewn, dovetailed logs, similar in appearance to a log house. The southern portion of the granary is timber-framed.

The Granary is almost entirely constructed out of wood, and is set back about 435 feet from Minnesota Highway 5 (Island View Road). The length of the building runs parallel to the main driveway on the farm, and its east façade is set back about 13 feet from the west side of the driveway. However, a photograph from 1885 shows the granary in a location to the west of the Early Residence. The Granary was moved to its current location sometime after Andrew Peterson's death, and it is unclear why it was moved.

The structure sits atop an exposed foundation of stones and wood planks. The structural system of the northern portion of the main level of the Granary is stacked log while the south portion of the building is timber-framed. The exterior is clad with board and batten siding. The exterior of the wood boards have remnants of red paint on them. In areas where the siding is missing, whitewash is visible on the exterior face of the log structure. The structure has a gable roof clad in wood shakes. The roof's ridge runs north and south.

The door is oriented towards the driveway, and to the south of the center of the east façade. The door

112 Edward Lofstrom, "The Andrew Peterson Farm," National Register of Historic Places Inventory/Nomination Form, Heritage Committee Carver County Historical Society, Waconia, Minnesota, October 11, 1979.

casing comprises simple boards. The door itself is a plank door comprised of five vertical boards. The door has two strap hinges on its south vertical casing and a small, pivoting, wood door latch. A few inches above the latch, there is a modern-day, metal strap and lock. A window opening is roughly centered between the door and the north end of the wall, and between the bottom of the siding and the roof edge. It is trimmed with boards and covered over with a shutter made of three vertical boards. There appears to have been another small opening at some point. There is a small square portion the width of two boards, centered between the door and the southern edge of the wall. It is covered with two vertical wood boards. No trim is present at this opening.

The south façade is divided horizontally by a trim piece, or horizontal batten, at the level of the lowest portion of the roof. The facade has two window openings, one above the other and centered on the wall. The bottom opening is a few feet from the floor. It is boarded up by three vertical boards, but has visible wood trim on all sides. Directly above this opening, and a few inches above the horizontal batten, is the other window opening. This opening is also trimmed on all sides. The opening holds a six-over-six single-hung window. The height of the window is a few inches shorter than the opening, and a wood board infills the space between the top of the window and the bottom of the head trim.

The north façade has the same configuration as the south façade, but it does not have the lower window. The west façade does not have any fenestration.

The interior of the Granary comprises three spaces: the south wood-framed half, the log north half, and the loft area above with grain bins still present on the south half of the loft. The wood-framed north half of the Granary is finished on the interior with wood boards on the bottom half of the walls. The log structure on the north side is chinked which is visible on both the interior and the exterior faces of the structure. The north and south halves on the main level are both roughly cube-shaped in volume. There is a door opening between the two



Figure 96: Granary loft space, camera facing north.



Figure 97: Granary rafter with writing.



Figure 98: Damage to vertical board and batten siding at ground.

halves on the main level and a stair that runs north and south through the middle of the building up to the loft. There are wood chutes that penetrate through various points in the loft's floor. They are open at the top and latched at the bottom. It is surmised that these are wood chutes that were used to remove grain from the loft.

EXISTING CONDITIONS

The Granary is in poor condition and has been moved from its original location. The foundation has been determined stable by the structural assessment conducted for this report, provided it be used in the same way it is currently. However, the foundation does not appear to extend to frost depth, so reinforcements based on occupancy will be required prior to use.

The log walls of the north half of the main level exhibit powderpost beetle damage which indicates excessive water and moisture infiltration in the structure. The chinking between the logs is cracking and falling out fairly uniformly throughout. The ends of the logs also show rot and deterioration.



Figure 99: Grain hatch in loft floor/ first level ceiling and log wall at first floor level, camera facing north.

The board and batten siding is significantly deteriorated, especially near the ground and also around nails. There are areas where the cladding has entirely deteriorated or is otherwise missing. This condition leaves the building open to water infiltration and further damage.

The floor boards in the building are rotten, especially near the walls. They also show signs of powderpost beetle damage. Some of the roof sheathing was replaced several years ago during a restoration effort. The fascia board is bowed on the east side of the structure.

TREATMENT RECOMMENDATIONS

It is recommended that the Granary be restored to its 1885 appearance as evidenced in historic photographs. It is also recommended that the Granary be relocated to its 1885 location if a reasonable agreement can be made between CCHS and the property owner of the land where the building once stood.

It is recommended that the following exterior and general restoration items be completed:

- Relocation of the building to its original, historic location on the site.
- Continued mitigation of powderpost beetles.
- Replacement of rotten wood members. Depending on the extent of the timber replacement necessary, the restoration may become a reconstruction. The structure and all of its components should be documented in detail prior to commencing work.

- Conservation of the interior logs that have carvings, presumably from Peterson's lifetime. Those logs should be conserved, even if they are not reused in the construction of the building.
- Construction of historically appropriate and stable footings that address safety concerns for use. The most historically appropriate foundation for this Granary would be simple stone footings at the outside corners and under the center wall. This type of foundation would allow air circulation which was integral to the function of the building but does not protect against frost heave. It is recommended that frost footings in the assumed, original locations of the footings, with stone above grade to provide the look of the original construction with the durability of modern construction methods.
- Painting the structure. While the historic photographs from 1885 are not in color, they provide us with information on how dark it was compared to other buildings. It can reasonably be surmised through research and clues from other out buildings that the red used on the barns is also the appropriate color for the Granary.
- Roofing be inspected and replaced with shingles, in-kind.
- Restoration of the existing south windows as shown in the 1885 photographs and the east window opening shutter restored as described in Andrew Peterson's diaries.

The recommendations for the interior of the Granary depend on the final use of the structure.

- For interpretation of the Granary as a granary, it is recommended that restoration of the existing grain bins and reconstruction of the missing grain bins, as well as installation of plaster to convey both the original construction and the function of the structure as vermin-proof storage.
- For reuse of the Granary for a new purpose or Rehabilitation, it is recommended that retaining all existing interior historic fabric including bins and chutes. This limits the potential reuse program options as the ceiling heights are low and the spaces are small. Viable reuse options would be as a storage area or small display area. In the Master Plan, it was recommended that it be used for small group meetings, as a ticket booth for events, caretaker's office, or staging for weddings or events.[113] These uses would likely not be viable.



Figure 100: Missing siding on west exterior wall of Granary.



Figure 101: Roof eaves.



Figure 102: Roof shakes.

113 Thorbeck, "Historic Andrew Peterson Farmstead Concept Master Plan," 42.



Figure 103: Log ends in south wall of original portion of Granary.



Figure 104: Interior of Granary west wall.



Figure 105: Log to frame connection on interior of Granary, view facing northwest.

STRUCTURAL ASSESSMENT

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

Building Assessment

The Granary, consists of a one and one-half story structure, consisting of a stacked timber portion at the north, and a timber framed portion at the south.

All structures appear to be supported loose rock piers. Grade slightly sloped at the site and is typically about 6"-12" below the first floor framing.

The term "stacked timber" is utilized within this portion of the report to describe the assumed original stacked timber portion and the term "timber framed" is used to describe the timber framed portion that is assumed to be constructed later.

The granary is currently unoccupied, but was previously used for farming operation, mainly storage and handling of grain and feed. It is our understanding that the owner is interested in allowing access to the structure as a public exhibit space or storage in the future.

Exterior Siding

Description

The wood siding consists of painted 1" (nominal) thickness x 12" (nominal) boards oriented vertically with applied battens that cover the joints between the boards. The boards and battens are typically attached to the structure with cut nails.

Condition

The overall condition of the exterior siding is in good to fair condition with isolated areas in poor condition. The areas in poor condition were typically adjacent to the grade and consisted of rot, soft

wood, and loss of material. In some areas, the battens and the boards were observed to be very loose or missing altogether.

Analysis
The siding is in serviceable condition. Loose boards and battens should be re-nailed as necessary. Missing and rotted boards and battens should be replaced. Paint should be applied when repairs have been completed.

Roof System
Description
The roof is a pitched, gabled roof with the ridge running in the north-south direction. The roof consists of sawn wood shingles nailed to the roof sheathing. The roof sheathing consists of nominal 1" boards of varying widths. The roof rafters at the stacked timber portion of the structure consist of wood poles at approximately 24" on center, hewn flat on the side that mates with the roof sheathing. The roof rafters at the timber framed portion of the structure are sawn lumber, approximately 2"x4" in dimension, and about 24" on center.

Condition
The overall condition of the roof system is good. Work performed in the last few decades appears to have focused on the roof. Many of the hewn pole rafters are new and a few of the sawn rafters are new. Most, if not all, of the roof sheathing boards are new. The wood shingles appear to have been replaced when the other related roof work was performed.

Analysis
The roof appears to be performing adequately.

Foundation
Description
The foundation of both structures is loose rock piers. The depth and makeup supporting elements below what is visible is unknown.

Condition
The rock piers do not appear to be attached to any underlying structure, thus, making them susceptible to heaving and shifting.

Analysis
Additional structural supplementation work (additional piers, etc.) may be required during repairs to meet code requirements for occupancy. It is likely that the existing piers do not extend to frost depth.

Stacked Timber Construction

Description

The north portion of the structure is constructed of stacked timbers, overlapped at the corners with a joint. The timbers are hewn relatively flat on four faces. The timbers are hewn to about 5" in width and varying heights between 6" and 16". The space between the logs and other voids are chinked with what appears to be mortar.

Condition

The portion of the building constructed using stacked logs is in fair to poor condition. One area extending from the bottom to the top at the southwest corner was observed to be in exceptionally poor condition. It appears that the area was exposed to moisture for a considerable amount of time, as rot permeates the entire assembly. It is likely that a past roof leak would have led to this level of deterioration. Other areas were fairly sound with isolated areas of rot and worm damage.

Analysis

The stacked timbers that have been affected by worms and rot should be replaced as needed.

Timber Frame Construction

Description

The south portion of the structure is constructed timber frames consisting of hewn hardwood timbers connected to one another with pinned mortise and tenon joints and a few lapped and pinned joints. Vertical timbers bear on a timber sill. The vertical timbers are attached to a top timber on which the rafters bear. Horizontal girts are let into and are positioned between the vertical timbers at the second floor level and halfway between the timber sill and the girt at the second floor line. Diagonal braces extending from the south corner posts to the east top timber and the north-south top timbers serve as the lateral system for the framed structure.

Condition

The timber framed portion of the building is in fair to poor condition. Areas with substantial rot and worm damage were observed.

Analysis

The timbers that have been affected by worms and rot should be replaced as needed. Additional structural supplementation work may be required during repairs to meet code requirements for occupancy

First Floor Framing Construction

Description

The first floor framing in the timber framed portions consists of north-south oriented hewn beams at about 30" on center, let into the north and south sill beams and bearing intermittently on the rock piers. 1" boards nailed to the beams make up the floor. The first floor framing in the stacked log portion consists of north-south oriented beams. 1" boards, with the length running east-west, nailed to the beams make up the floor. This area was largely concealed by the floor, so the exact construction in unknown.

Condition

The first floor framing in the entire structure is in poor condition. A large portion of the floor boards were rotted or missing. The floor beams were observed to be rotted as well, with large section loss resulting from rot. The floor is generally unsafe to walk on.

Analysis

The floor is currently not suitable for any type of occupancy. The timbers that have been affected by worms and rot should be replaced as needed. Additional structural supplementation work (additional timbers, etc.) may be required during repairs to meet code requirements for occupancy.

Second Floor Framing Construction

Description

The second floor framing in the timber framed portions consists of north-south oriented hewn beams at about 30" on center, let into the north and south horizontal girts and spanning the north-south length of the timber framed portion. 1" boards nailed transversely to the beams make up the floor. The second floor framing in the stacked log portion consists of north-south oriented beams, let into the stacked timber. 1" boards, with the length running east-west, nailed to the beams, make up the floor.

Condition

The first floor framing in the entire structure is in poor condition. A large portion of the floor boards were rotted or missing. The floor beams were observed to be rotted as well, with large section loss resulting from rot. The floor is generally unsafe to walk on in many spots.

Analysis

The floor is currently not suitable for any type of occupancy. The timbers that have been affected by worms and rot should be replaced as needed.

Additional structural supplementation work (additional timbers, etc) may be required during repairs to meet code requirements for occupancy.

Items or Areas of Concern

Replace rotted wood

Replace all wood damaged by rot. In general, all wood at the first floor framing, portions of the stacked timber construction, and portions of the second floor framing should be replaced.

Time frame for this work Prior to any occupancy

Replace severely beetle-damaged wood

Replace all severely beetle-damaged wood.

Time frame for this work Prior to any occupancy

Investigate minor beetle-damaged wood

Determine the extent of damage to the wood members by scanning with a non-destructive testing device. Replace members as necessary.

Time frame for this work Prior to any occupancy

Reinforce timber connections

The connections between members should be evaluated for the wind loads required by the current Minnesota State Building Code and reinforced as necessary if the structure is used for any occupancy other than agricultural operations.

Time frame for this work Prior to any change in occupancy

Investigate and repair loose rock piers

Investigate the stability of the rock piers that support the structure. Installation of frost depth concrete piers may be required.

Time frame for this work Within one year

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, the masonry piers. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

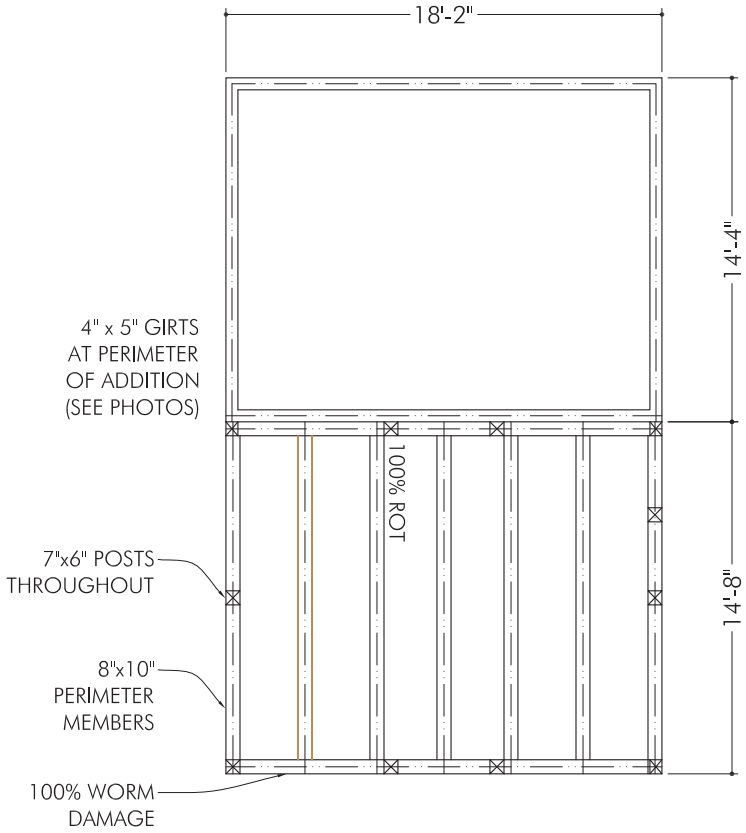
Exposed Exterior Wood

Periodically inspect and repair, if necessary, the siding, trim, windows and doors. Remove loose paint and repaint as necessary.

Time frame for this work Every 10 years

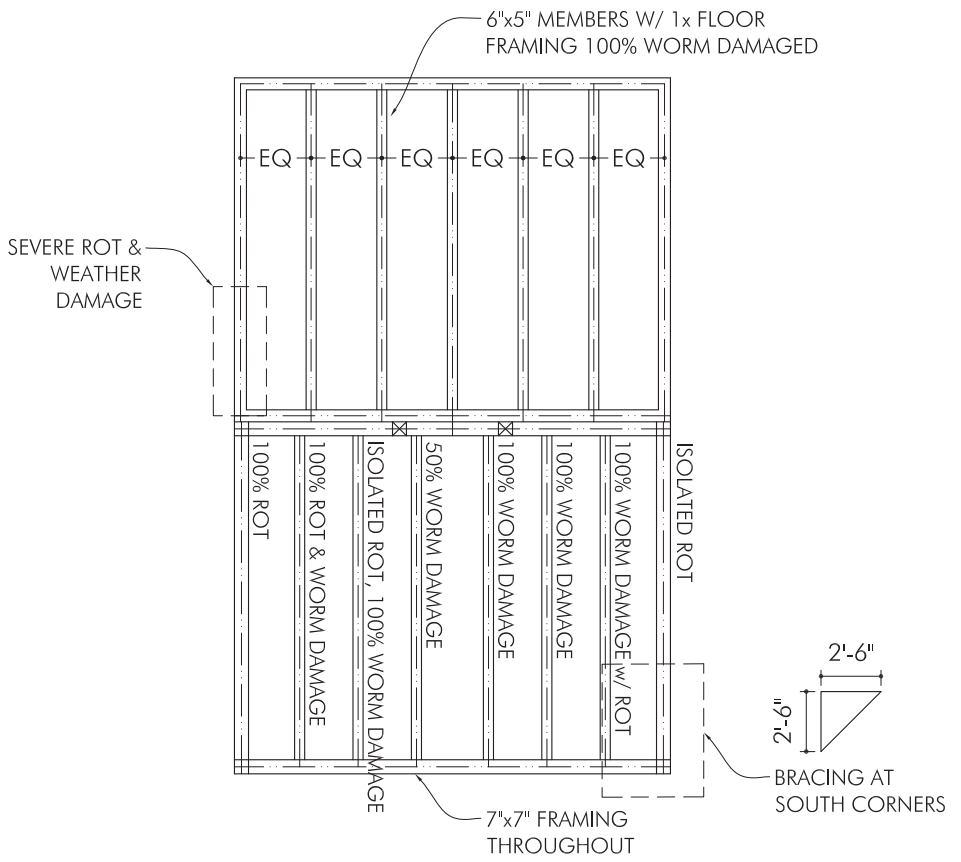
Summary

The Granary was observed to be in poor condition overall. Portions of the stacked timber and timber frame are in very poor condition and will require extensive repairs. Further in-depth investigation, design, and reinforcement of the structure is necessary if used for any future occupancy.



1 | FIRST FLOOR FRAMING

11.1 | 1/8"=1'-0"



2 | LOFT FRAMING

11.1 | 1/8"=1'-0"

0 2 4 8

Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

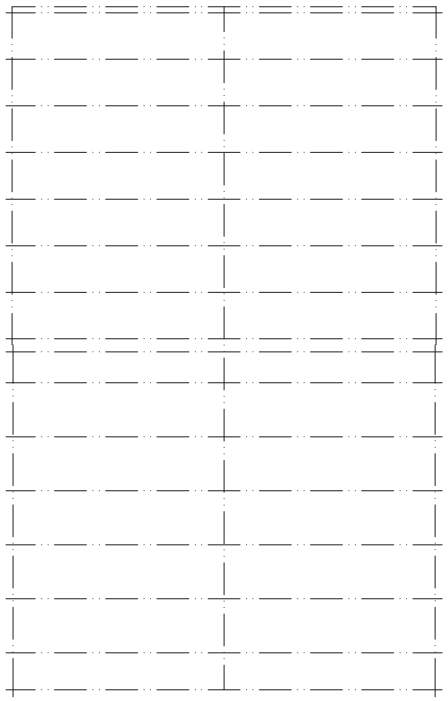
GRANARY

DATE 07.28.2017

DRAWN Mattson Macdonald Young

FRAMING PLANS

11.1



1 | ROOF FRAMING

11.2 | 1/8"=1'-0"



Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

GRANARY

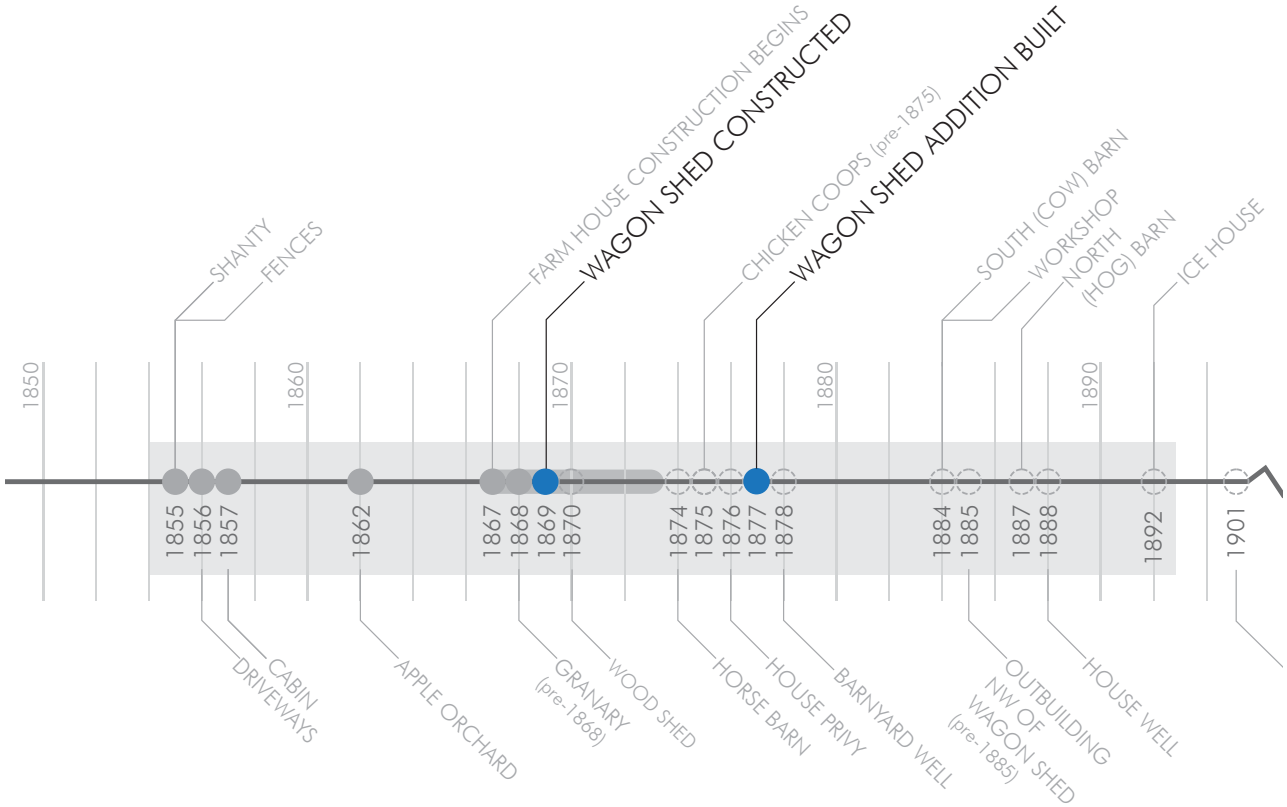
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DRAWN Mattson Macdonald Young

FRAMING PLANS

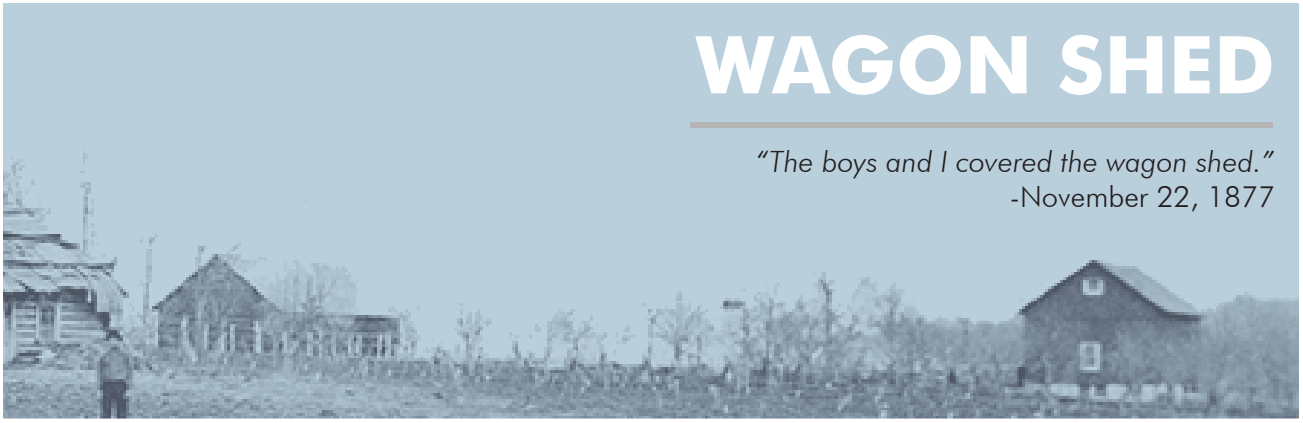
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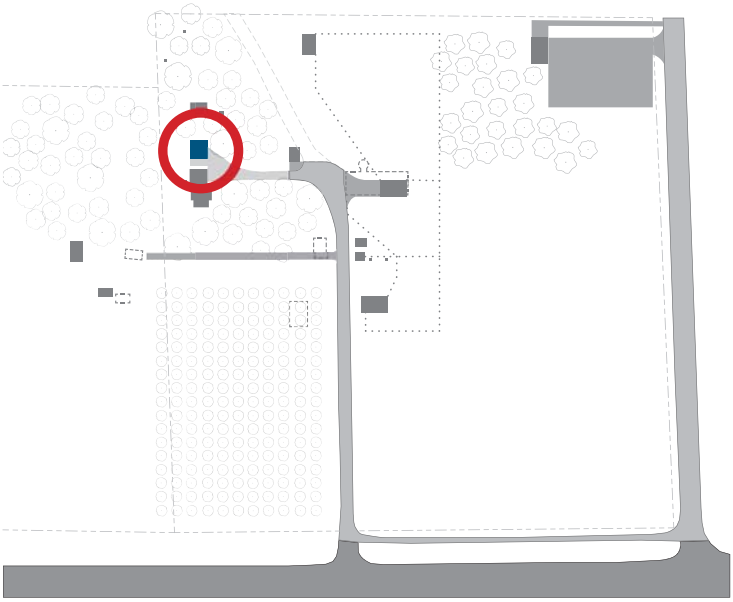



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FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED CONSTRUCTED
CHICKEN COOPS (pre-1875)
WAGON SHED ADDITION BUILT
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY (pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED (pre-1885)
HOUSE WELL

WAGON SHED

"The boys and I covered the wagon shed."
-November 22, 1877





Site Plan (no scale)

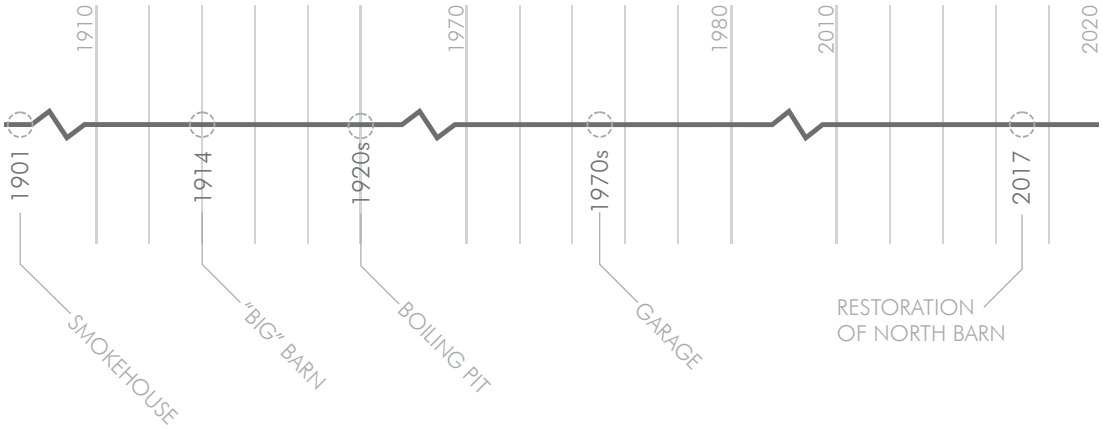




Figure 106: 1885 photograph showing Wagon Shed location to the north of the Farmhouse (right side of image).



Figure 107: 1885 photograph with Wagon Shed to the north (left) of Farmhouse.

WAGON SHED, 1869 (demolished 1888)

Condition: No longer existing
Contributing to Historic District: Possible if reconstructed

The wagon shed was used to store wagons, wheels, and sleds, as well as some tools on the farm.[115] Although built some time during or before 1871, it was enlarged in 1877 when more room was necessary.[116]

Historical Context For Wagon, Implement, or Machine Sheds

By Rolf Anderson

Wagon sheds, also referred to as implement or machine sheds, were constructed to house valuable farm equipment. They were found on most Minnesota farms beginning in the late 19th century, when they were first used for horse-drawn wagons and implements.

While the original cost for constructing an equipment storage building sometimes seemed prohibitive, experts cited long-term cost savings from the protection of the machinery. They reasoned that having a well-built implement shed could be the difference between equipment lasting five years or more than 30 years.

Equipment storage buildings were usually located on well-drained land near the center of farm activities. Orientation varied, but equipment buildings often faced east or south and could be used as a windbreak for the farmyard. They were most often built with dimensional lumber and sided with wood. The earliest buildings were simple structures with open sides. Many were lean-tos attached to other farm buildings. One of the most basic and popular styles was a three-sided building with the fourth side entirely open. Fully-enclosed buildings provided greater protection and more versatility of use. Equipment storage buildings needed large doors that could be conveniently opened with plenty of clearance for machinery.[117]

115 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, December 21, 1888.

116 Ibid, November 1877.

117 Granger, 6.307-6.308.

DESCRIPTION

Description Based on Andrew Peterson's Diaries

According to Andrew Peterson's description of his Wagon Shed in his diaries, it was "covered" in July 1869 but was not "sheathed" until September 1875. While the initial construction of the frame is not described, it is reasonable to assume that it was timber-framed based on the context. In the fall of 1877, Peterson constructed an addition to the Wagon Shed. Stone was purchased for the addition, perhaps for footings. The diary records that the Petersons moved their tools out of the Wagon Shed by 1888 and "tore down the shed."

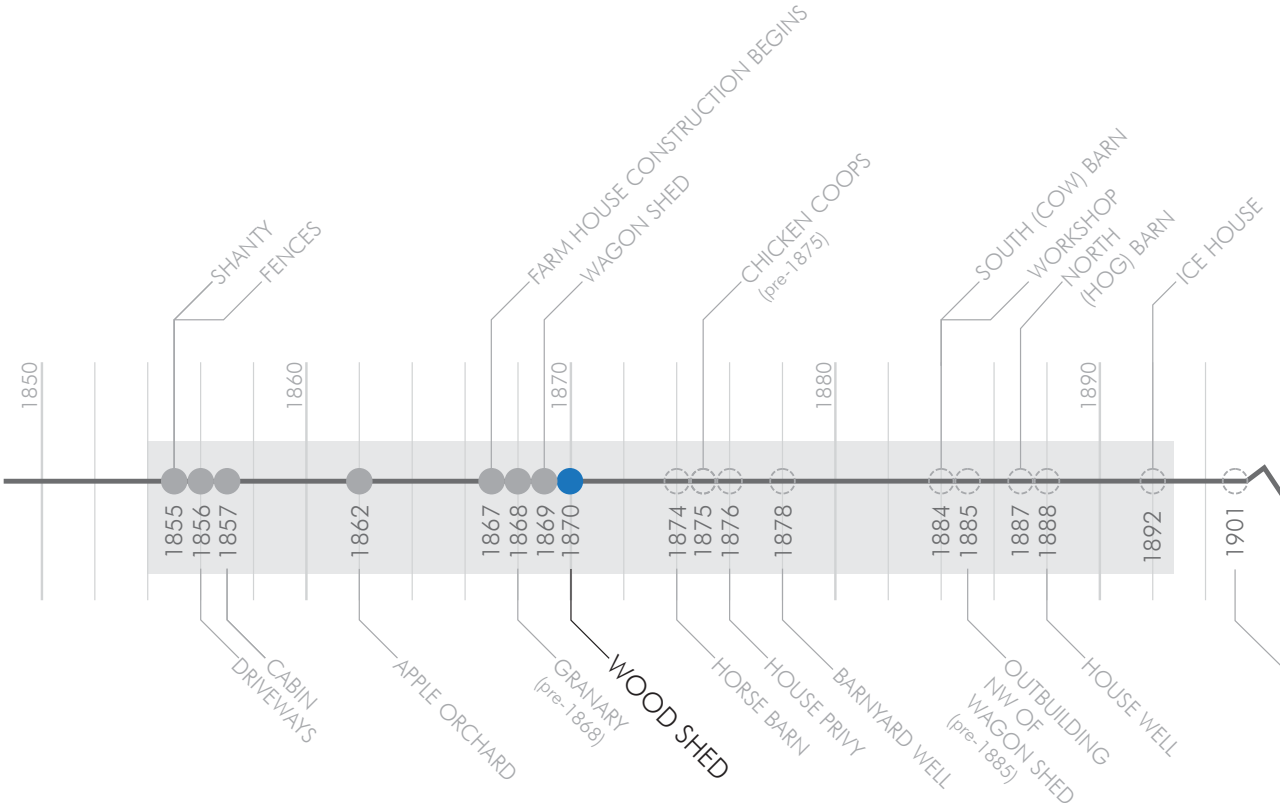
Description Based on Photographs of Building Assumed to Be the Wagon Shed

The Wagon Shed is no longer existing, but based on context and typical adjacencies of structures at a farmstead, the building that appears just north of the farm house was likely the Wagon Shed. Historic photographs of this structure show that the main portion of the building had a gabled roof that ran north and south. It appears to have had vertical wood siding.

CONDITION

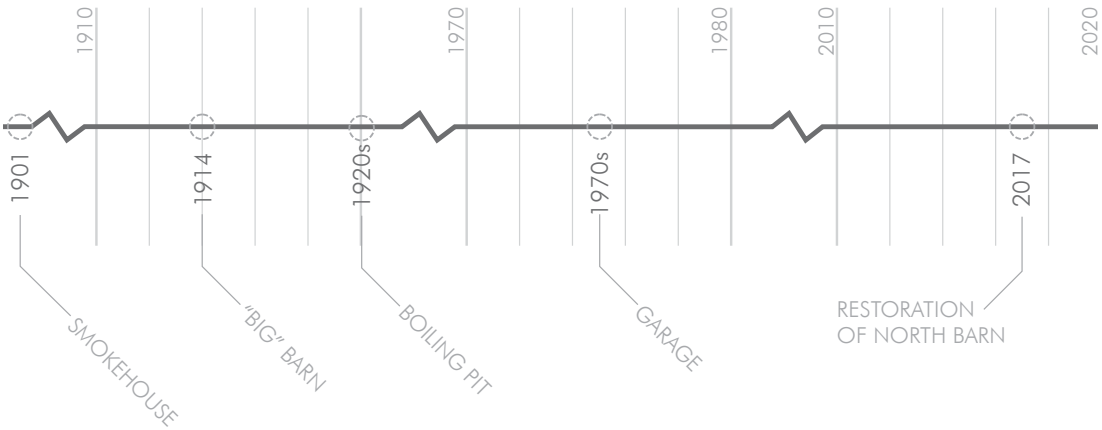
The Wagon Shed no longer exists.




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(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

WOOD SHED




1910
1970
1980
2010
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1914
1920s
1970s
2017
SMOKEHOUSE
"BIG" BARN
BOILING PIT
GARAGE
RESTORATION
OF NORTH BARN

WOOD SHED, 1870

Condition: Not existing
Contributing to Historic District: No

Historical Context For Wood Sheds

By Rolf Anderson

Woodsheds were once found on many Minnesota farms when firewood was the principal fuel for cooking and heating, and keeping the wood dry was important. Electric cooking ranges reduced the need for wood somewhat, as did conversion to coal, fuel oil, or propane gas for farmhouse heating. Woodsheds were often located close to the back door of the house. Woodsheds were either free-standing structures or additions to other outbuildings. They sometimes had one, two, or three open walls. After woodsheds were no longer needed, many were reused for storage purposes.[118]

On December 5, 1870, Peterson wrote, "Made a wood shed along side the granary." An entry from May 26, 1872 states, "Raised the fame of the wood shed." A later entry on October 10, 1873 states, "Freed and Malmborg have begun to nail shingles on the wood shed roof." An entry nearly eight years later on May 2, 1881, states, "We rolled the wood shed out of the way." The earlier entries suggest the wood shed was a rather substantial structure. For this reason, it is possible that one of the two unidentified buildings near the Farmhouse in the 1885 photograph could be the woodshed, particularly since the woodshed would be located near the house. A new woodshed was built in 1892.

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries

A wood shed was a part of the workings of the Andrew Peterson Farmstead. Andrew Peterson described his Wood Shed in his diaries from December 1870 to October 1873. There were few entries, but based on that information a reasonable physical description takes shape. He harvested the wood for the construction of the shed himself from his property. The structure was timber-framed with stone footings

118 Granger, 6.545.

and a wood shingle roof[119]. The Wood Shed was originally located near the Granary but was moved in 1881[120] and replaced or improved with a new Wood Shed in 1892[121].

EXISTING CONDITION

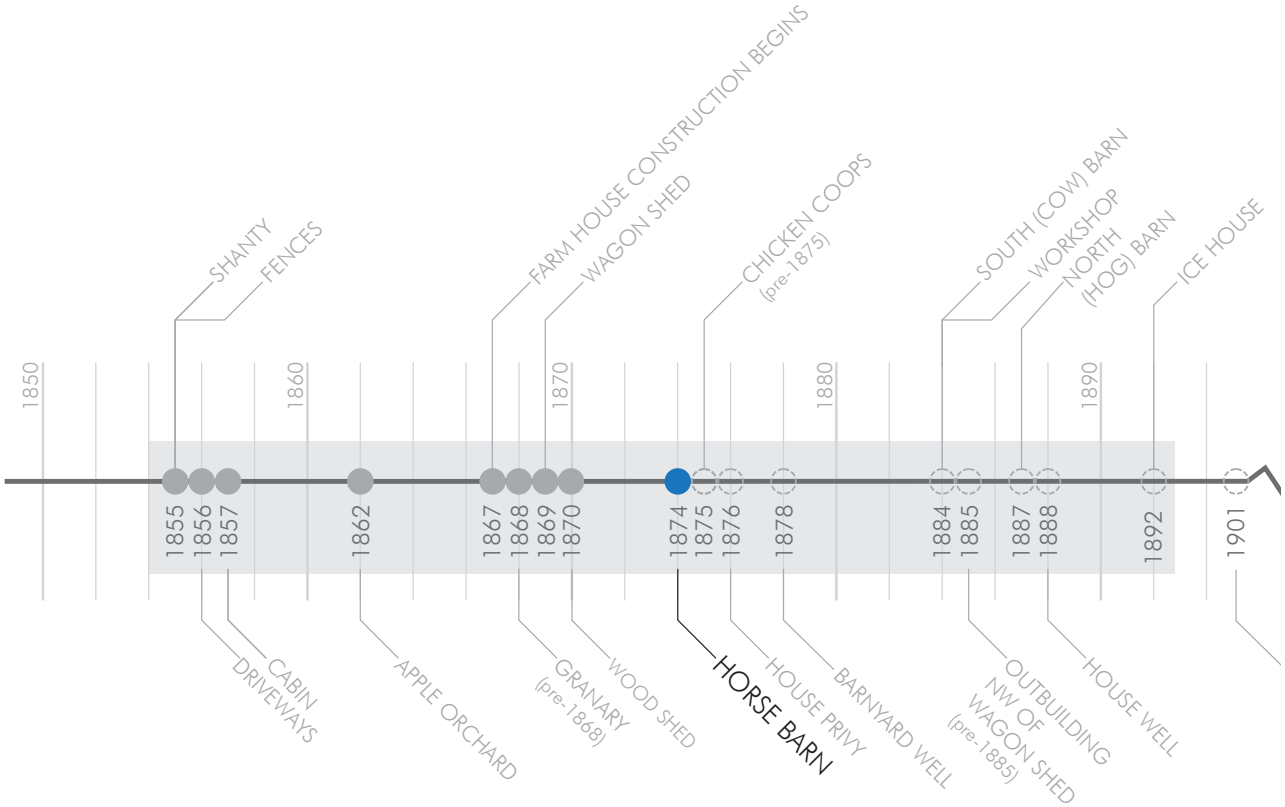
The Wood Shed no longer exists.

119 Ibid, May 23, 1872 and October 15, 1873.

120 Ibid, May 2, 1881.

121 Ibid, March 7, 1892.

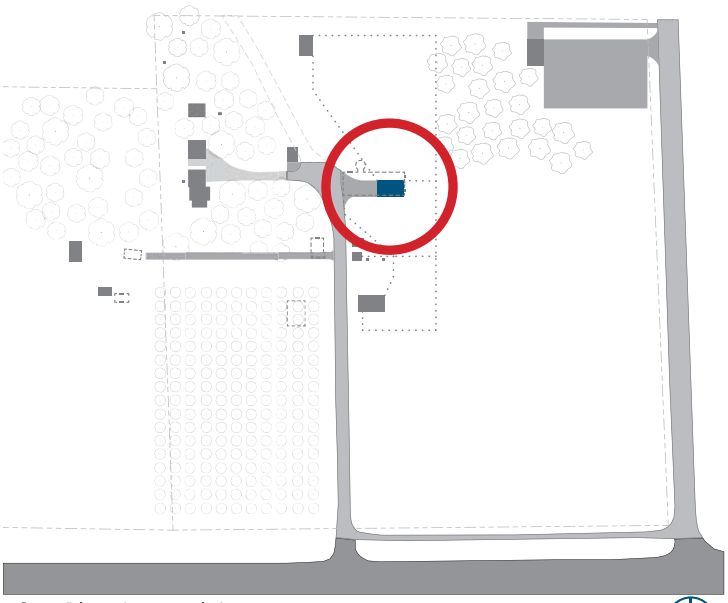



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OUTBUILDING
HOUSE WELL

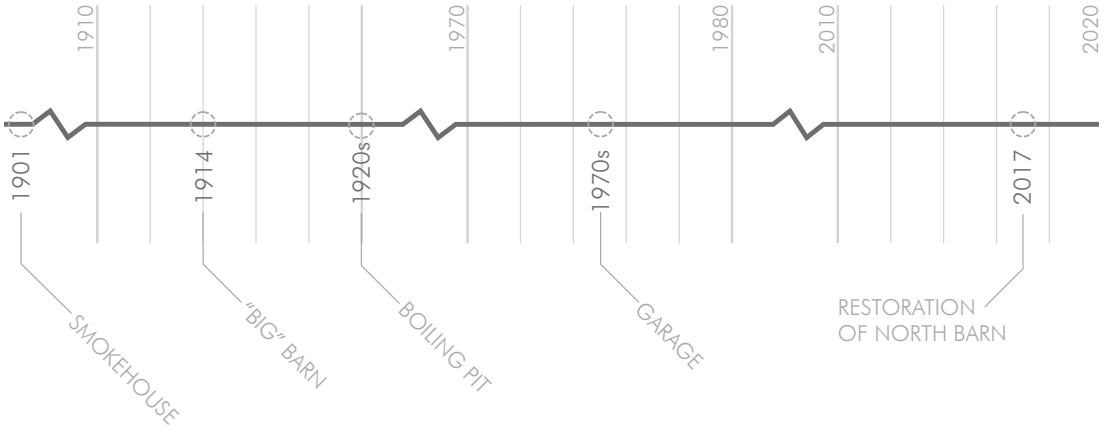
HORSE BARN

"I have come to an agreement with Johns Nilson that he is to build my new barn for $125.00. It is to be 62 ft. long and 26 ft. wide. He is to use the standing timber, finish it outside... However I am to pay him separately for the time that we made the stone footings and also I am to entertain the people when we have the barn-raising."

-March 1873 Cash Account Entry



Site Plan (no scale)



HORSE BARN, 1874

Condition: Not existing, some timbers exist in 1914 Barn
Proposed treatment: Documentation of existing 1874 timbers in 1914 Barn
Contributing to Historic District: Possible if reconstructed

Historical Context For The 1874 Barn (At The 1914 Barn Site)

By Rolf Anderson

Work horses and mules were the main source of mechanical power on Minnesota farms beginning in the early settlement period. Horses remained the main source of power until about 1920 when they were gradually replaced by trucks and tractors. But horses continued to be used until the mid-1950s. In 1930, it was estimated that most Minnesota farms kept four to seven horses. Nearly all horses were used for draft; very few were kept solely for riding. Some farms needed to devote 25 percent of their land just for growing oats, hay, and straw for the farm's own work horses.

Horses were kept untethered in stalls. It was recommended that each stall have an outside window so the horse could look outside. One farm manual advised that, "Horses require light, airy, and dry shelter, and are too valuable to be housed in buildings which do not meet these requirements." Horse barns often had a separate harness room.[122]

The 1914 barn was constructed on the site of the 1874 barn and a portion of the original foundation, and some timbers, were incorporated in the new building. The 1874 barn housed at least cows, sheep, and horses and would be considered a multi-purpose barn, which was the most common type of barn on Minnesota farms. A multi-purpose barn made economic sense for the general farmer and most barns during Minnesota's early settlement era were of this type. During this early period, multi-purpose barns were often built with indigenous materials such as logs.[123]

122 Granger, 6.293-6.295.

123 Granger, 6.223



Figure 108: 1885 photograph of the farmstead looking northeast, 1874 Horse Barn can be seen between the early residence log structure and the South Barn.

The first reference to the 1874 barn is dated June 13, 1873 when Peterson wrote that the site for the new barn was being cleared. Logs were acquired for the building, and on March 24, 1874, Peterson wrote that, "Nilson and A. Lundsten are chopping and dovetailing timbers." The stone foundation was completed, and on June 25, 1874, Peterson reported, "We raised the barn. We were 18 men." On December 19, 1874, Peterson noted that the cattle had been moved into the new barn. The sheep moved in on December 22, 1874. On June 4, 1875, Peterson stated, "Paul Birlion was here and I insured my barn for $500.00."

The 1914 barn is a much larger building than those built on the farm during the nineteenth century. The building represents the larger farming operations that began to emerge after the turn of the century. While the barn had an earlier silo, the current silo dates to ca. 1950. A one-story addition to the west elevation was built in the late 1950s.

PHYSICAL DESCRIPTION

On June 25, 1874, Andrew Peterson and 17 other men raised the first barn on the farmstead.[124] Since it was the first barn on the property, it was used to house horses, cows, and sheep until the other barns were built.[125] The cows were moved into the south barn when it was built in 1884, and the north pig barn was built in 1887.[126]

Although the 1874 barn no longer exists, there is one photograph from 1885 that captures the barn in its location to the north of the south barn. Andrew Peterson also wrote about the process of building the barn.

The barn was constructed similarly to the other two barns on the property. From the 1885 photograph, we can see that it had a gabled roof. The ridge ran east and west. It was wood-framed.[127] Its foundation was constructed out of stone.[128] It had one primary level and a loft.[129]

From visual inspections of the current 1914 barn on site, it is clear that some of the barn framing was repurposed from a different structure. Several notches exist in these logs that do not line up with any other member. Due to the distance between notches in the salvaged wood framing, it is posited that the timber was repurposed from the 1874 barn. Since the 1914 barn was built directly on the site of the 1874 barn, it is also surmised that some of the foundation stone from this barn was reused and added to for the 1914 barn.

According to the diary, the barn was sheathed and sided in wood.[130] It was also painted with linseed oil based paint,[131] which would produce a glossy finish to protect the wood.[132] The interior of the barn contained animal stalls and partitions on the main level, and there was a hay loft above the horse stalls.[133]

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124 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, trans. NAME (Place of Publication: Publisher, Date), June 1855-November 1855.

125 Ibid, November and December 1874.

126 Ibid, Various pages.

127 Ibid, March 6, 1874.

128 Ibid, July 1874.

129 Ibid, July 3, 1876.

130 Ibid, July 1874.

131 Ibid, November 14, 1882.

132 "History of Linseed Oil Paint," accessed July 19, 2017, http://www.solventfreepaint.com/info/history_linseed_paint.htm.

133 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, July 7, 1876.

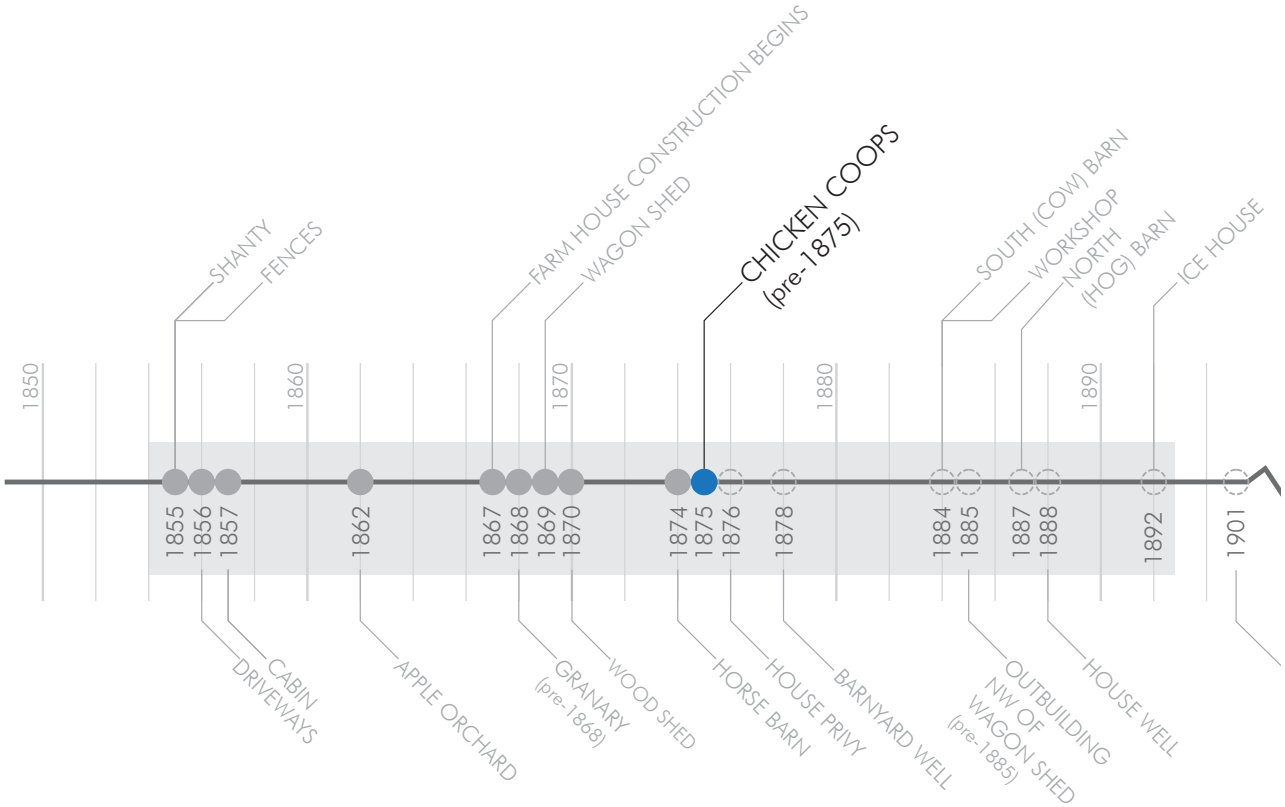
EXISTING CONDITION

The 1874 barn no longer exists. However, inspection of the 1914 barn suggests that some, if not all the framing was salvaged and currently exists as part of the 1914 barn. A significant number of the members show damage from powderpost beetles. In many cases, the damage from powderpost beetles is significant enough that entire timbers will need to be replaced. The stone foundation of the 1914 barn is presumed to date to 1874. The mortar has eroded from the joints.

TREATMENT RECOMMENDATIONS

The existing 1874 barn timbers in the 1914 barn should be thoroughly measured and photographed for the information they contain about the 1874 barn. These timbers should also be protected and preserved against deterioration and damage. This means that until any work is done to the 1914 barn, maintenance and care of the 1914 structure that currently protects many of these timbers should be continued. It is recommended that the stone foundation be repointed. It is also recommended that during any future treatment of the 1914 barn, that the components of the 1874 barn receive proper treatment, including documentation and analysis, so as not to lose any critical, historic information from the first barn on the Andrew Peterson Farmstead.

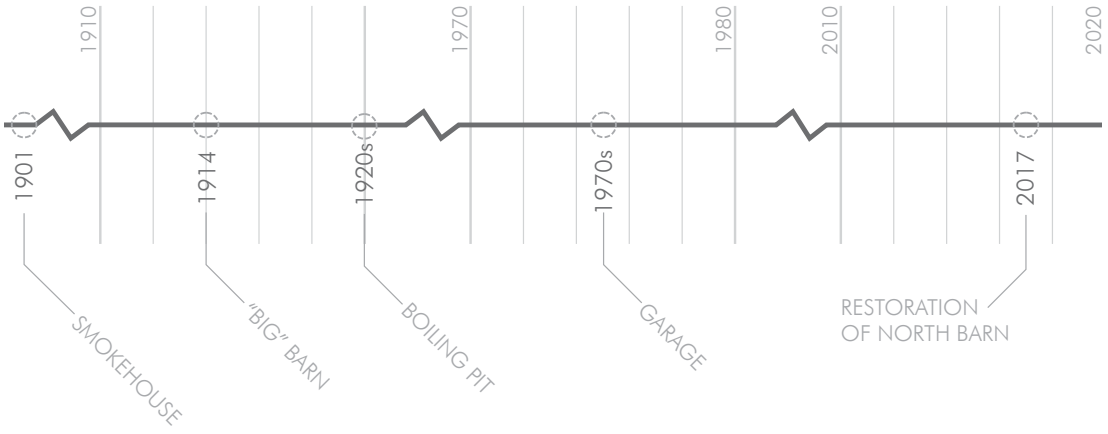



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GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

CHICKEN COOPS

"Sture went and put a loft in the chicken house."
-October 21, 1884





CHICKEN COOPS, pre-1875

Condition: Not existing
Contributing to Historic District: No

Historical Context For Chicken Coops

By Rolf Anderson

Poultry houses were found on nearly all Minnesota farms by 1890. Chickens were the most common type of poultry in the state. The poultry house was usually the closest outbuilding to the farmhouse so that women could conveniently tend chickens and gather eggs. They were also sited within, or near, the farm orchard and/or adjacent to the vegetable garden so that the poultry could keep the insect population down near the fruits and vegetables. Most poultry houses were one-story structures and their size was determined by the size of the flock. The best poultry houses were dry, clean, well-ventilated, roomy enough to provide exercise, warm during cold weather, and well-lit with some darker areas. Many were built with removable roosts and other fixtures so that the building could be given a thorough annual cleaning with disinfectant.[134]

The Peterson farm had a chicken house. The earliest reference is dated November 29, 1875, when Peterson noted, "Made a platform under the chicken roosts, etc."

PHYSICAL DESCRIPTION

During Andrew Peterson's time on his farm, he built several chicken coops and houses. The first time a chicken house is mentioned is in 1875, but the entry suggests that there was already at least one chicken coop on the farm.[135]

The chicken coops no longer exist. Andrew Peterson's diary mentions that the chicken house has roosts with platforms below them.[136] There is also an entry that explains they put wainscoting in the chicken house.[137]

134 Granger, 6.365-6.367.

135 Ibid, November 20, 1875.

136 Ibid.

137 Ibid, August 19, 1884.

There was also a loft.[138] The chickens were protected from mosquitos with mosquito bar frames that Peterson built.[139]

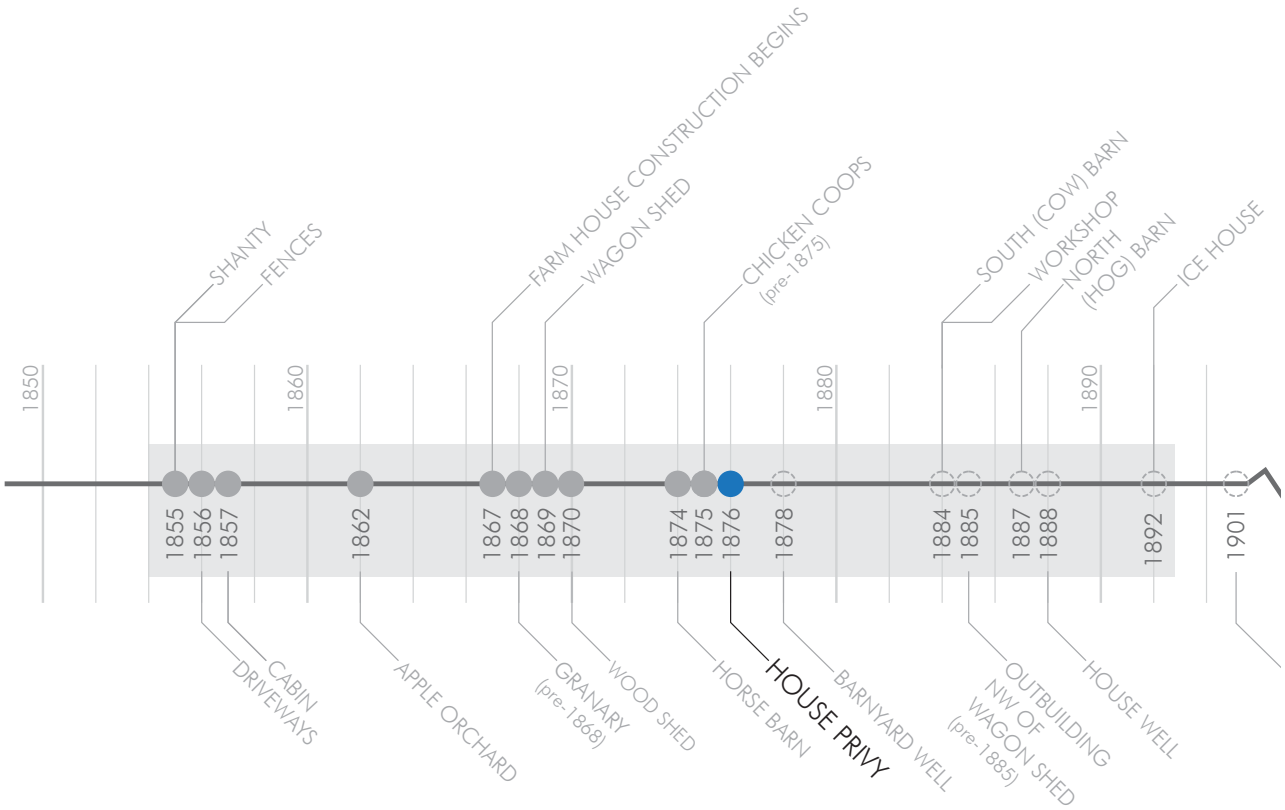
EXISTING CONDITION

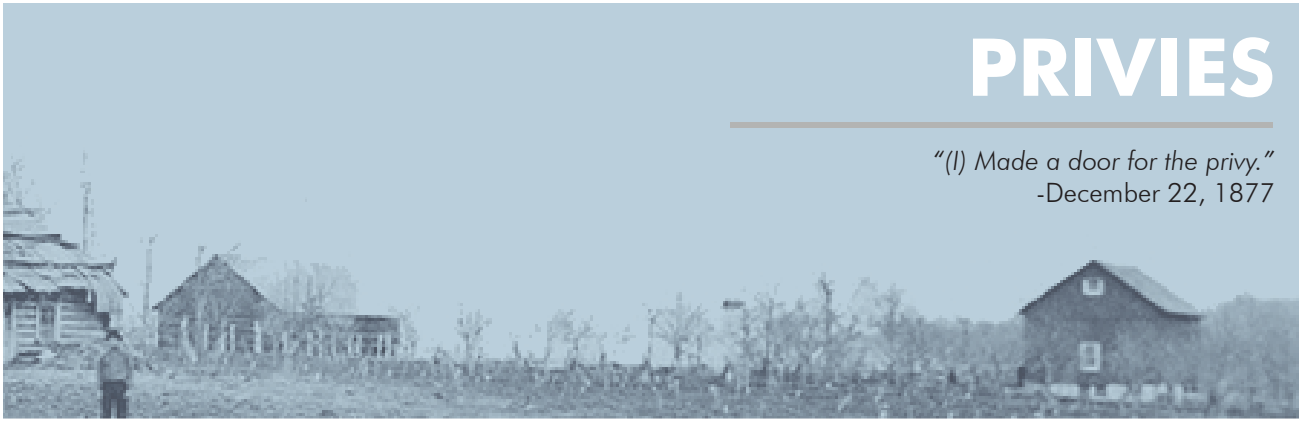
No chicken coops remain on the farm.

138 Ibid, October 21, 1884.

139 Ibid, July 28, 1890.

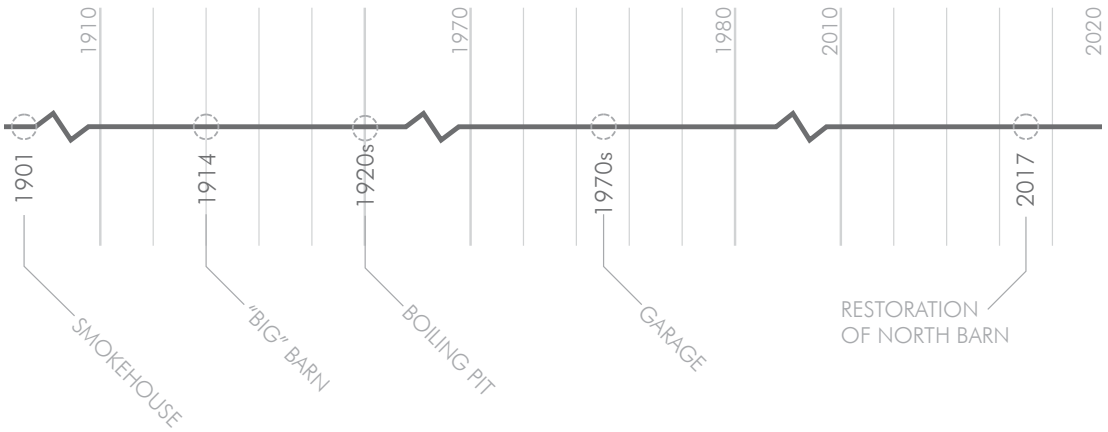



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FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH
(HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL



PRIVIES

"(I) Made a door for the privy."
-December 22, 1877



PRIVIES, 1876

Condition: Not existing
Contributing to the Historic District: No

Historical Context For Privies

By Rolf Anderson

Privies, also called outhouses, were small, unheated, outdoor toilets used before indoor plumbing became available on farms. They were usually square or rectangular, wood frame buildings with gable or shed roofs. A typical outhouse might be four feet square. Many were portable and could be moved to new locations as needed. Early farm privies usually had an open pit underneath the building. The concrete vault privy was considered more sanitary. Privies were usually located a "prudent distance" from the well and farmhouse.[140] On the Peterson farm, there was a privy near the house and one near the barnyard.

PHYSICAL DESCRIPTION

Although the Andrew Peterson moved onto the farmstead in 1855[141] and started building his permanent Farmhouse dwelling in 1867,[142] he did not build an outhouse until 1876.[143]

The privy was described as being north or northwest of the farmhouse in an interview between Josephine Mihelich (Author of *Andrew Peterson and the Scandia Story*, 1984) and Karl Peltz (brother of Mary Peltz) in 2002.

EXISTING CONDITION

The privies no longer exist.

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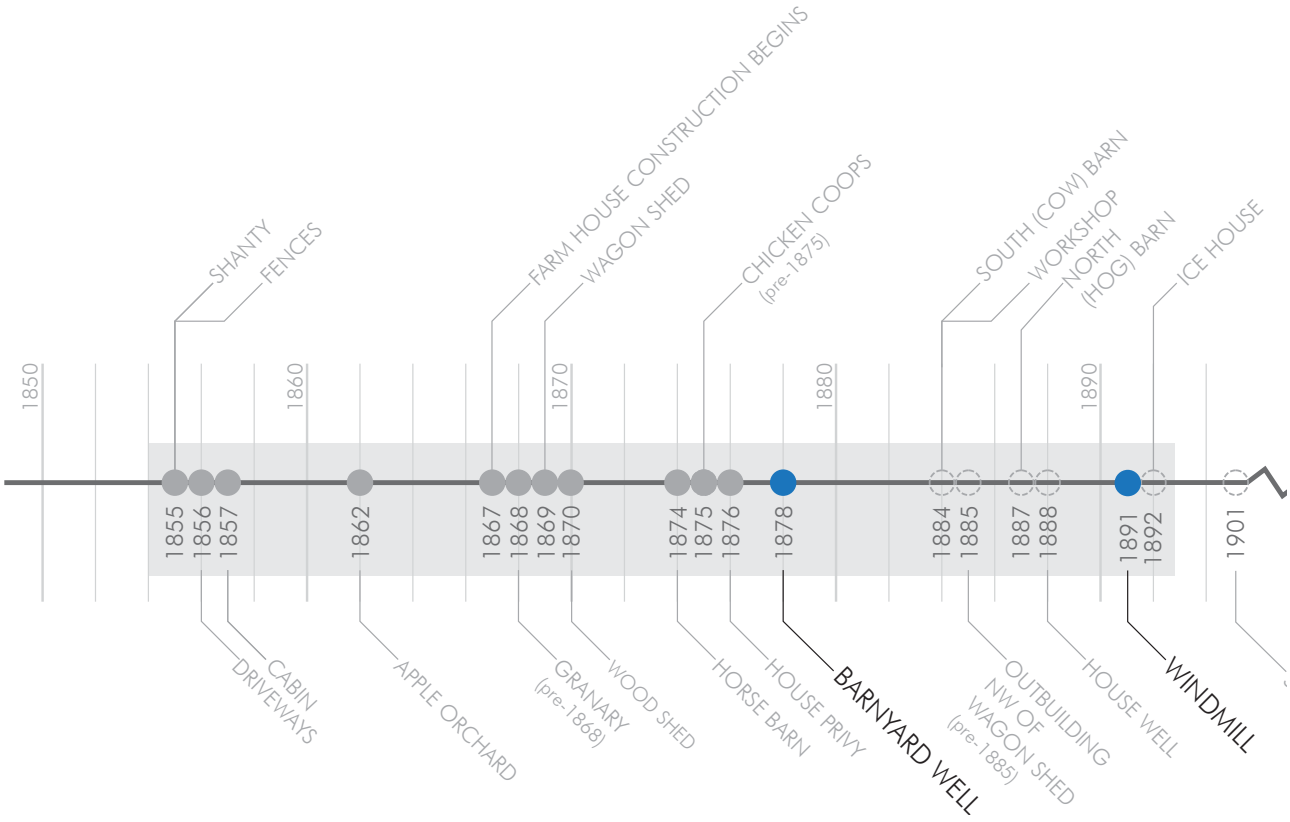
140 Granger, 6.393-6.394

141 Ibid, November 15, 1855.

142 Ibid, June 8, 1867.

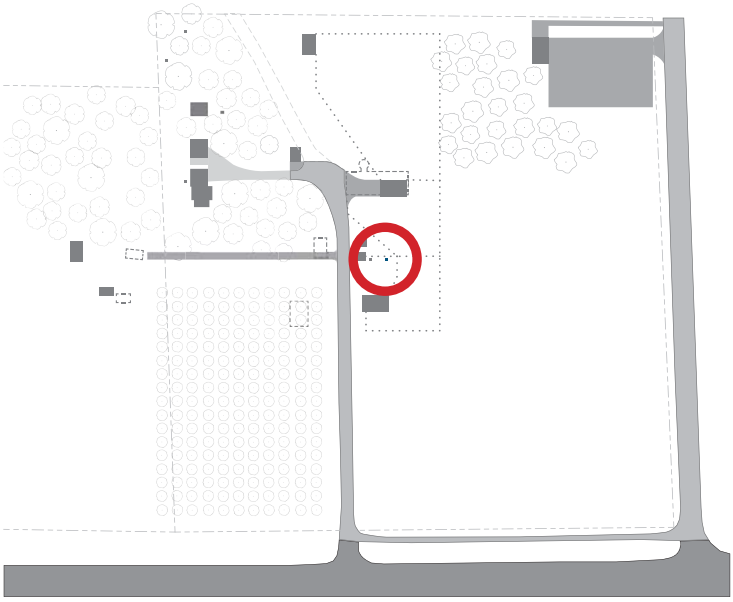
143 Ibid, November 16, 1876.



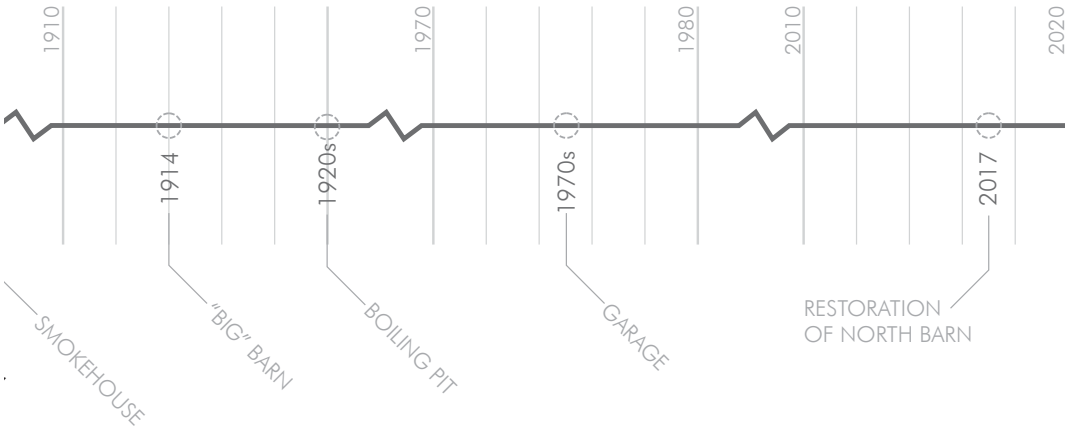

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FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL
WINDMILL

BARNYARD WELL, WELL HOUSE, AND WINDMILL

"It is now dug and brick-walled. The well is 26.5 feet deep from the surface down to the bottom."
-December 16-19, 1878



Site Plan (no scale)



BARNYARD WELL, 1878
WELL HOUSE, Unknown Date
WINDMILL, 1891

Condition: Not existing (above grade)
Contributing to Historic District: Possible if reconstructed

Historical Context For Barnyard Well and Well House

By Rolf Anderson

Essential for a supply of drinking water, wells were found on nearly all Minnesota farms. There were several types of wells depending on the locality, soil composition, water table depth, and the labor, equipment, and resources available for their construction. During the early settlement period, water could be taken from springs and streams in the summer, but in winter it was not as readily available and ice or snow was usually melted on the kitchen stove. Pumps were offered for sale in St. Paul as early as 1851, but many farmers could not afford them, or lived where they were not available. But most settlers dug wells and installed pumps sooner or later.

The earliest wells were typically dug or bored and operated with a rope and bucket. Such wells were often less than 25 feet deep. Driven wells consisted of a pipe fitted with a mesh-covered point that was forced through the soil to a layer of water-bearing sand or gravel where water freely entered the pipe. Drilled wells were more expensive but were the deepest, safest, and most long-lived. Most wells had a mechanical pump to move the water. Farm specialists recommended that wells be sited on ground that was higher than the barn and away from other possible sources of contamination.

Wells were usually covered at the surface with wood, concrete, or cast-iron covers. Sometimes a small, open-sided shed was built over the well. Dug or bored wells were often lined, or curbed, with stone, brick, tile, or concrete. Wells were sometimes used for food storage before refrigeration. Perishables could be suspended by a rope over the water in the cool hollow of the chamber.[144]

Andrew Peterson's first reference to a well was on November 30, 1855,

144 Granger, 6.517-6.519.

when he stated, "Dug for well." Over the years, multiple wells were installed on farm. In 1878, a well was installed in the farmyard that was 26.5 feet deep. Peterson purchased 400 bricks in Chaska to line the well. He also writes about a well on the west side of the Farmhouse, on the "south forty," and a well in the "west meadow." But finding water was sometimes a challenge. In 1891, a new well was dug for a windmill that was to be erected. But two attempts, and a second location, were required before water was found. On July 17, 1891, Peterson wrote, "Today the well drillers decided it was no use to drill any deeper for water in that place as there is still no sign of water although they are down 300 ft. They decided they would try a place alongside the drive way by the cabbage beds." Then on August 5, 1891, he wrote, "The well drillers, Henry Schepers and George Newcomb, set the pump in the well and finished up by noon. The well is now finished so we can pump water. It is 180 ft. deep, but I am to pay for 186 ft. as the pump adds another 6 ft. Henry Schepers said the water is standing in the well to a height of 45 ft."

DESCRIPTION

Description of Barnyard Well based on Andrew Peterson's Diaries

The barnyard well was built in 1878.[145] According to Andrew Peterson's diary, the well was 26.5 feet deep.[146] The well curb was made of timber[147] and the interior of the well was lined with bricks from Chaska.[148] The well had a cover,[149] which most likely was made of wood. The well also had a pump.[150]

Description of the Well House based on Oral History

Although it is not mentioned in the diary entries, the barnyard well was said to have had a pump house at some point in time. Based on the historic context, it is likely that the well house was a small shed that was constructed over the 1878 well. However, little information has been found about the physical characteristics of this well house or when it was constructed.

145 Ibid, May-December 1878.

146 Ibid, December 19, 1878

147 Ibid, December 14, 1878.

148 Ibid, May 27, 1878.

149 Ibid, July 31, 1890.

150 Ibid, January 2, 1884.

Description of Windmill based on Andrew Peterson's Diaries

As explained above in the historical context, a deeper barnyard well was drilled in 1891. In the months prior to and following the drilling of this well, Andrew Peterson described the setup of a windmill, which accompanied this well in the barnyard. On July 25, 1891, Andrew Peterson wrote that he took white oaks from the island, and on August 29, 1891, he used them to made posts for the windmill. The windmill was large, and required a machine to raise it. On September 3, 1891, two hired men, Scholtz and Hawkenpiler, and the Peterson men, raised the windmill. Frank painted the windmill on October 17 of that year. Andrew Peterson continued to record mprovements to and maintenance of the windmill in his diary entries through August of 1895. A notable improvement was the galvanized lattice work that Peterson began installing around the windmill posts on August 30, and finished on September 1, 1894.

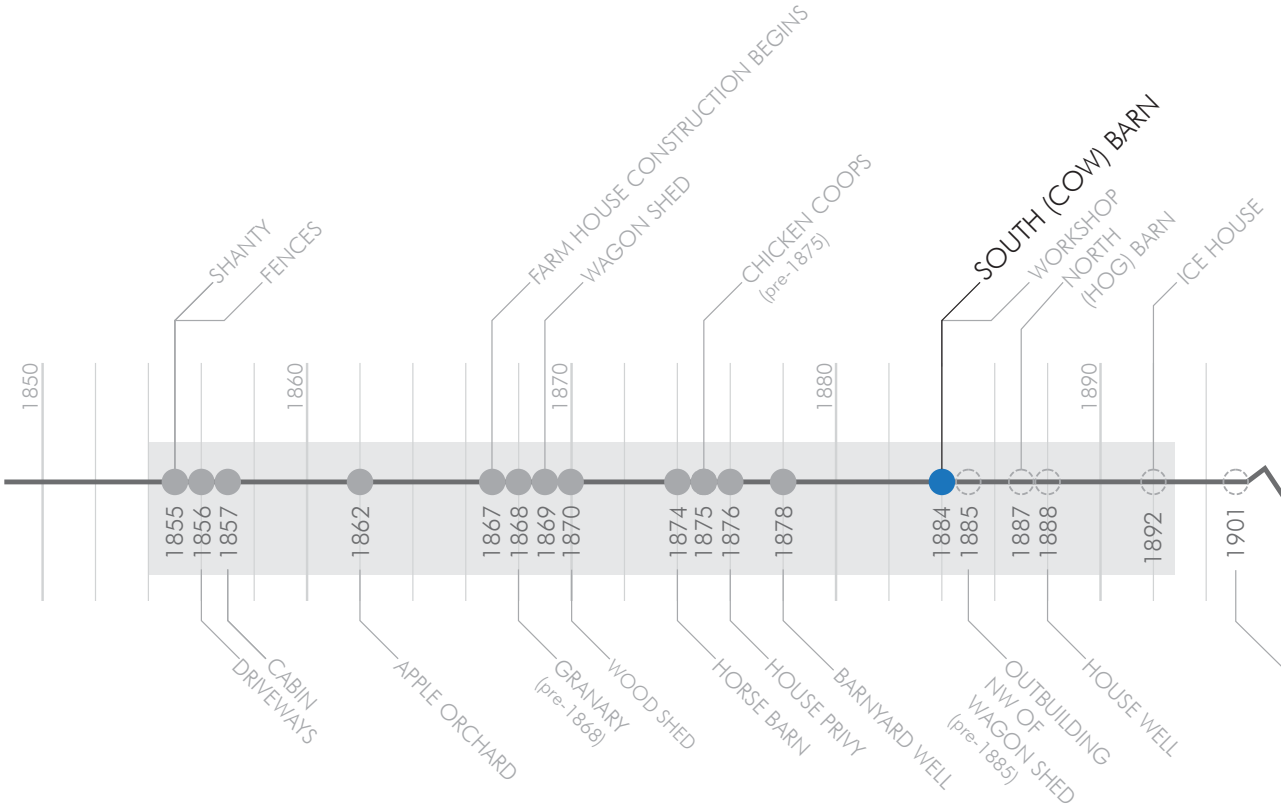
CONDITION

The barnyard well, well house, and windmill no longer exists.

TREATMENT RECOMMENDATIONS

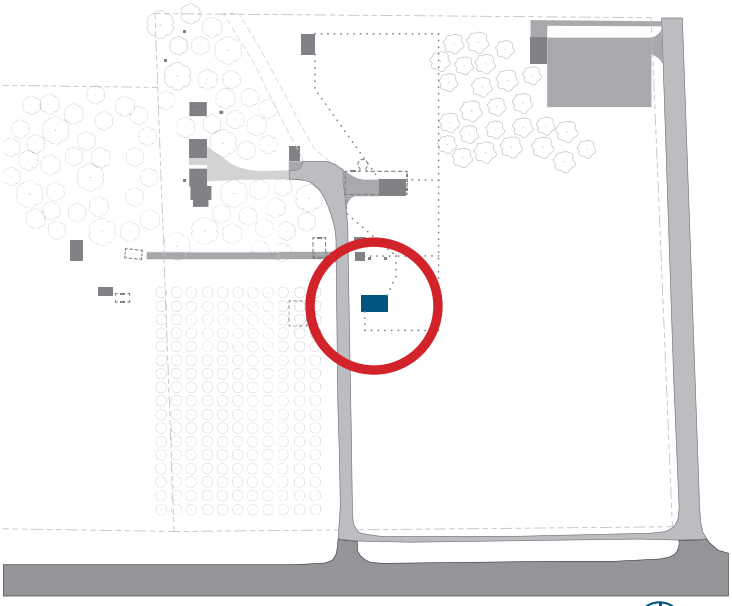
Treatment of the historic wells is dependent on CCHS's interpretation of the site and the condition of the wells. Appropriate next steps include condition assessments of the wells, testing of the well water, and further discussion of the programming and use of the wells.




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FARM HOUSE CONSTRUCTION BEGINS
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GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
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BARNYARD WELL
OUTBUILDING
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HOUSE WELL

SOUTH (COW) BARN

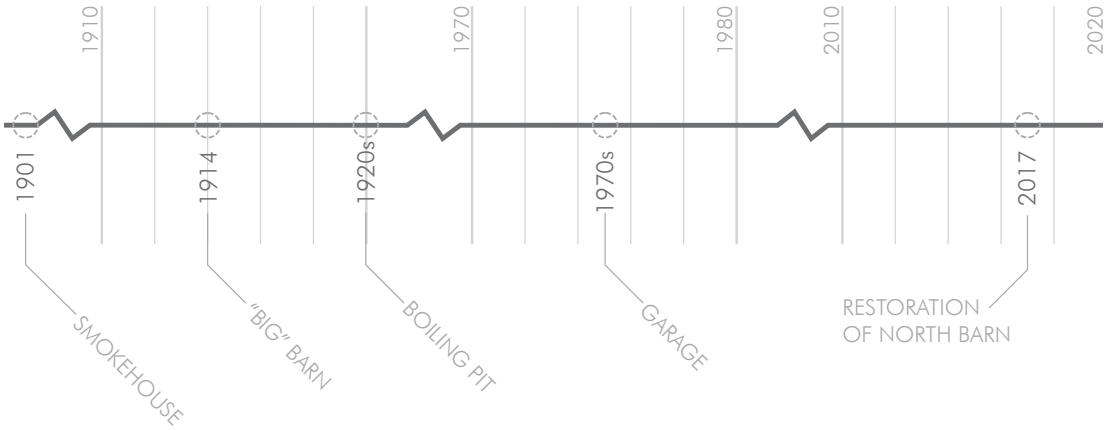
"The boys and I went down to the shore of Clearwater Lake on Charles Sieman's land and piled rocks and stone for a small barn that I intend to build."
-November 17, 1882



Site Plan (no scale)



Figure 109: Southwest corner of the South Barn.



SOUTH COW BARN, 1884

Condition: Existing
Proposed treatment: Restoration
Contributing to Historic District: Yes

Historical Context for the South Cow Barn

By Rolf Anderson

In the 19th century some Minnesota farmers raised beef for home consumption, but relatively few raised beef cattle for sale. But by the 1890s, experts were recommending livestock farming as a way for farmers to diversity their operations. Beef cattle were often raised in combination or general purpose barns that also housed dairy cattle and horses. Ultimately, both beef production and dairying became very important enterprises on Minnesota farms.

Beef cattle barns were best sited on well-drained land, down-wind from the farmhouse. South-facing openings optimized sunlight. The barn usually included space for the storage of hay and feed. In a basement-type barn, feed was stored on the first floor and the cattle were housed in the basement. In barns without basements, hay was stored in a loft and dropped from there to the floor below. In some barns, the beef cattle were housed in stalls, but in others there was "loose" housing, meaning the animals walked around freely. But stalls and pens were always provided for bulls and for calving, and for new-born animals. Most farms that raised beef and other livestock had fenced fields and pastures to allow the animals to eat crop residue and to graze on forage plants.

Dairy cows were typically confined in individual stalls. Stall barns were also called tie-stall or stanchion barns. Pen barns provided "loose" housing and were much less common because a second building was needed where the cows were secured while they were milked. Milk cows were expensive and somewhat delicate and good barns were necessary to protect this investment. Dairy structures were the most regulated buildings on Minnesota farms and subject to stringent laws.[151]
According to Andrew Peterson's diary, the cow barn housed additional animals such as a horse. For this reason, the cow barn could also be considered a multi-purpose barn, like the 1874 barn. The cow barn represents the evolution of construction practices on the farm. The 1874 barn was built with logs, but the cow barn was built in part with dimensional lumber, which became the favored building material after

151 Granger, 6.17-6.19, 6.81-6.83.

local lumberyards were established and as farm income improved.[152]

The first reference to the cow barn was on November 17, 1882, when Andrew Peterson noted, "The boys and I went down to the shore of Clearwater Lake on Charles Sieman's land and piled rocks and stone for a small barn that I intend to build." Worked proceeded at intervals until the building was essentially completed in late 1884, although improvements to the barn continued into 1886.

On June 29, 1883, Peterson noted, "We returned from Minneapolis with a load of shingles and lumber." Work on the cellar for the barn began on August 1, 1883 and on October 1, 1883, "Anton Boss, the stone mason, began to work on the basement of the barn." On June 6, 1884, Peterson noted, "Today we had a barn raising. We were 17 men working, and we finished at noon. After dinner J. Nilson and the boys put up the rafters." The October 1884, the doors and windows were installed and the barn was painted. On November 18, 1885, Peterson finished the floor in the barn and on April 1, 1886, he constructed a gate between the calf pens.



Figure 110: East facade of South Barn.



Figure 111: South facade of South Barn.

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries

The South Barn is described in the diaries of Andrew Peterson from 1882 until 1894. The South Barn was described as a timber-framed structure with a stone foundation, clad in painted board and batten siding with a painted wood shingle roof and gutters.[153] It is possible that the painting of the roof mentioned in the diary refers to painting with the boiled down sap of a birch tree, termed tar. This is a traditional method still used in Sweden to make roofs more water repellent. However, Peterson

152 Granger, 6.223.

153 Ibid, October 1, 1883, January 17, 1884, June, 1884, and September 9, 1884.



Figure 112: North facade of South Barn.



Figure 113: West facade of South Barn.

does not describe preparing sap or tar which, presumably, he would have known how to do as it was a traditional, Swedish method. The granary and barn roofs in the 1885 photographs are very light and appear to be the same tone as the window trim on those buildings. Sap or tar would have made the color of the wood roofs either unchanged or slightly darker in appearance. Since Peterson bought paint often, it is possible that the roofs were painted with commercially available paint.

The barn had multiple doors and windows as well as calf pens and a horse stall.[154]

The English translation used the term "dovetail"[155] in reference to preparing the timbers which may have been the nearest English word for the term Peterson used but does not accurately describe the form of the mortise and tenon timber joints made. Since both the description and the resulting physical product are available, it is possible to more accurately translate Peterson's entries, not only for this structure, but for others as well (such as the North Barn where "dovetail" is similarly used).

Description Based on Physical Evidence

The south barn is located about 20 feet to the east of the driveway, and roughly 140 feet south of the 1914 barn. It is a three-level bank barn with a fieldstone foundation, vertical board and batten siding that has been painted red, white-painted corner boards, and a gable roof with standing seam metal roofing. The grade is at the main level on the north side of the barn, and slopes downward to the lower level at the south side.

The north façade has a single door opening centered on the wall. There are two barn doors at this opening that are constructed out of wood boards and reinforced on the inside with a z brace. The doors are wide and almost square. The top of

154 Ibid, January 14, 1886 and April 1, 1886.

155 Ibid, December 10, 1883.

the door is about half of the height of this wall.
The east and west façades of the barn have the same configuration. At the lower level, there are two openings centered in the stone portion of the wall. There are vertical metal bars in these openings. There is one double hung, six-over-six light window centered on the wall at the main level. The vertical board and batten siding has a horizontal joint just below the level of the bottom of the roof. The siding continues in the same plane to the top of the gable end. There is a single six-pane window directly above the main level window. This window is the same width as the window below, but is about half of the height.

The south side of the barn has three openings in the stone at the lower level with no other fenestrations in walls of the wood-clad, upper levels.

The floor of the lower level of the barn is dirt, and the walls are all fieldstone masonry walls. The underside of the wood framing and boards of the floor above are exposed on the lower level. There is one girder that runs in the east and west direction in the center of the floor. This is supported by one timber post at its center. There are also two metal posts, one on each side, which reinforces this floor.

The wood floor of the main level of the barn is mostly covered with hay. The timber framing members of the barn are exposed on the interior, as are the floor beams of the loft are directly above the top of the windows. The wood roof sheathing is visible from the loft level.

EXISTING CONDITION

The board and batten siding on the south barn was once painted but the paint is greatly deteriorated, exposing the wood. This puts the cladding and therefore the structure at risk for water infiltration and accelerated deterioration. The siding itself is deteriorated along the bottoms of the boards, adjacent to the stone foundation and grade. In some areas, the battens and trim have fallen off.



Figure 114: Lower level interior of South Barn, facing south.



Figure 115: South Barn loft and roof interior.

The doors no longer function properly, making it difficult to access and secure the building. In addition, they are not airtight, allowing the elements and uninvited guests to enter the structure.

The standing-seam metal roof appears to be in good condition, however it is not historically appropriate. The original roof was covered in wood shingles that Andrew Peterson bought in Minneapolis.[156]

The interior wood elements have been damaged by powderpost beetles. In some cases, such as the floor boards, they are so severely damaged that while they appear solid and stable, they are not. This is not a safe condition. The structural engineer has identified additional structural and safety concerns, detailed in the structural assessment of this section.

The stone masonry foundation walls have several colors of mortar which indicates at least one round of repointing and maintenance to the structure. There are cracks in the mortar presently.

TREATMENT RECOMMENDATIONS

It is recommended that the south barn be restored to its 1885 appearance.

It is recommended that the board and batten siding and exterior trim be replaced in-kind where deteriorated and that it be painted with a historically appropriate red, glossy paint (see Appendix C: Historically Appropriate Coatings for appropriate paint and colors). The diary mentions painting the barns and going into town for more linseed oil.[157] Linseed oil and pigment produces a durable glossy paint that protects the wood.[158] The use of red paint was mentioned in the diary[159] and was also verified onsite through paint samples from the inside of the south barn. Interior samples were taken since they would have the least discoloration from the sun. In addition, although the historic photographs from 1885 are in black and white, the barns are much darker than the log structure in the foreground of the photo, which was not painted. From these photographs, it is also evident that the window frames were very light, and it can be reasonably deduced that they were a similar shade of white as the farmhouse where physical evidence remains.

156 Ibid, June 29, 1883.

157 Andrew Peterson, *The Diary of Andrew Peterson 1855-1898*, November 14, 1882.

158 "History of Linseed Oil Paint," accessed July 19, 2017, http://www.solventfreepaint.com/info/history_linseed_paint.htm.

159 Andrew Peterson, *The Diary of Andrew Peterson 1855-1898*, June 14, 1888.

Returning the doors to working order is recommended. At this time, future use should be taken into account so that the doors function in a manner that is both historically appropriate and adequate for the new use.

The roofing should be replaced with historically accurate wood shingles. The diary mentions that several trips were made by family members to get shingles from Minneapolis during the time that the barn was being constructed.[160] In addition, a diary entry recorded the day when Peterson's sons began to nail shingles to the barn.[161] Since there is not enough information on Peterson's painting process for the roofs, recommending either painting or tar as a coating for the barn roofs would be speculative. It is recommended that further research on roof painting be completed.

The wood elements of the structure that are rotten and damaged by powderpost beetles should be replaced in-kind. Temporary measures should be taken to assure that access is limited to those who know the dangers of the flooring and structure until the structure is repaired and stable.

The stone masonry foundation should be repointed with a mortar that matches the original, historic mortar in texture, appearance, and strength.

The recommendations for the interior of the barn depend on the future use.

- If the barn is used more-or-less as it was historically, to shelter animals, then the resulting treatment would be Restoration and would include returning the building, inside and out, to its 1885 configuration and appearance.
- If the barn is used for a new purpose, for instance to display farm equipment as suggested by the Master Plan,[162] then the resulting treatment would be Rehabiliation. It is recommended that the Rehabilitation include returning the exterior of the barn to its 1885 appearance. The changes necessary for Rehabilitation would need to be managed and designed carefully. Pains should be taken to avoid concealing elements of the building interior that are significant. This is a challenging proposition when turning a historic barn into a climate-controlled, secured, occupiable, code-compliant building.

160 Ibid, June 29, 1883, August 8, 1883, and March 8, 1884.

161 Ibid, June 17, 1884.

162 Thorbeck, "Historic Andrew Peterson Farmstead Concept Master Plan," 42.

STRUCTURAL ASSESSMENT

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

BUILDING ASSESSMENT – SOUTH BARN

The South Barn is a two story timber framed structure with a cellar level. The grade elevation varies for this structure, in the very typical fashion for barn structures, in that the grade elevation matches the first floor level at the north wall and slopes downward so that grade elevation matches the cellar floor at the south elevation. The South Barn is rectangular in shape, approximately 38' in the east to west direction and 24' in the north to south direction.

The foundation walls are rubble stone masonry, which support the timber framing of the first floor, loft level and roof framing. There is one beam line within the building supported on timber columns offset approximately 2' from the building centerline.

The South Barn is currently unoccupied, but was previously used for farming operations, likely livestock housing and feed storage. It is our understanding that the owner is interested in occupying the structure as a public assembly space in the future.

EXTERIOR SIDING

Description

The wood siding consists of painted 1" (nominal) thickness x 12" (nominal) boards oriented vertically with applied battens that cover the joints between the boards. The boards and battens are typically attached to the frame of the structure with cut nails.

Condition

The overall condition of the exterior siding is in good to fair condition with isolated areas in poor condition. The areas in poor condition were typically adjacent to the grade or the foundation wall (depending on the area) and consisted of rot, soft wood, and loss of material. In some areas, the battens were observed to be very loose or missing altogether.

Analysis

The siding is in serviceable condition. Loose boards and battens should be re-nailed as necessary. Missing and rotted boards and battens should be replaced. Paint should be applied when repairs have been completed.

ROOF SYSTEM

Description

The roof is a 12/12 pitched, gabled roof with the ridge running in the east-west direction. Its outer layer consists of an exposed fastener sheet steel roofing installed over at least one layer of existing shingles (wood shingles were observed through the gaps in the roof sheathing boards). The roof sheathing consists of nominal 1" boards of varying widths, but typically between 10" and 12", with a gap between boards of approx. 2". The roof rafters are 2x6 (1-7/8"X5-3/4" actual) spaced at about 30" o.c. at the outer town main frame bays and at about 36" o.c. at the middle frame main bay. The rafters are supported near their ends at the top of the exterior walls, at their approximate mid-span by the framed purlins and are propped up against the adjacent rafters at the ridge.

Condition

The overall condition of the roof system is good. The roof plane appears to dip and roll at a few locations, but it is not clear if that is a directly related to the roof system, or if it is the result of settlement of other parts of the structure. The rafter tails at the eaves and a small portion of the roof sheathing boards at the gables are exposed. No major deterioration was observed.

Analysis

The roof appears to be performing adequately.

FOUNDATION WALLS

Description

The fieldstone foundation walls were exposed at the exterior above grade at the east, west and south sides of the building. The complete interior was exposed at the interior. The fieldstones that are the main component of the foundation and are gently rounded and typically between 4" and 12" in diameter. The exterior stones appear to have been cleaved for a flat surface at the surface. Mortar occupies the space between the stones and serves as a binder. The depth of the foundation walls below grade and the makeup of the footings are unknown.

Condition

The overall condition of the foundation walls is fair. Portions of the wall between openings at the south elevation appear to have displaced laterally at the top, pitching outward. Repairs appear to have been made to the foundation though out its life, indicating that cracking and/or mortar deterioration has taken place in the past.

Analysis
The foundation appears to be performing adequately. Mortar deterioration and cracking should be repointed. The pitching foundation wall should be adequately fastened to the structure at the top and monitored for further movement.

EAST-WEST TIMBER FRAMES

Description
Two geometrically similar east-west oriented frames serve as gravity and lateral elements for the structure and comprise the north and south wall. The north frame as an allowance for upper and lower access doors.

The frames typically consist of hewn hardwood timbers connected to one another typically with pinned mortise and tenon joints and a few lapped and pinned joints.
The frames consist of 7 full height vertical timbers bearing on a timber sill. Two rows of horizontal girts are positioned in between the vertical timbers. A top timber spans all of the verticals and is the bearing point for the rafters. The north south frames tie into the verticals at various locations. Diagonal braces are installed at 4 locations at the top section.

Condition
The east-west timber frames were in fair to good condition. A few loose/ displaced mortise and tenon joints were observed.
Analysis
Most of the wood structural members were in serviceable condition. Timbers that have been affected by worms should be replaced as needed. Additional structural supplementation and reinforcing work may be required during repairs to meet code requirements for occupancy.

NORTH-SOUTH TIMBER FRAMES

Description
Four north-south oriented frames serve as gravity and lateral elements for the structure. The outer frames comprise east and west wall of the structure. All four frames are similar, however the outer frames have more horizontal girts and a different brace layout.

The frames typically consist of hewn hardwood timbers connected to one another typically with pinned mortise and tenon joints and a few lapped and pinned joints.

The frames consist of 3 main vertical timbers bearing on a timber sill. Two rows of horizontal girts at the outer frames and one row of horizontal

girts at the inner frames are positioned in between the vertical timbers. Diagonal braces extend from top beam to sill beam at the outer frames. Diagonal braces extend from the top beam to the vertical posts at the inner frames. The braces are lapped and pinned at locations where they cross the horizontal girts at every instance. Angled posts are connected to top beam of the frames that support east-west oriented roof purlins that support the rafters mid-span. The east-west frames tie into the north and south verticals at various locations.

Condition
The north-south timber frames were in fair to good condition. Most of the wood structural members were in serviceable condition. A few loose/displaced mortise and tenon joints were observed. Worm damage was observed at a few of the angled posts that support the roof purlins.

Analysis
Most of the wood structural members were in serviceable condition. Loose joints should be tightened or reinforced. Additional structural supplementation and reinforcing work may be required during repairs to meet code requirements for occupancy.

First Floor

Description
The first floor consists of 3 plies of 1" full thickness sawn boards constructed over supporting beams. The floor boards run the length of the structure (east-west). The supporting beams are 7"x8" timbers at about 4' on center. The beams are supported by an 8X8 timber oriented east-west near the center of the structure. The timber is supported at two locations by columns to an unknown footing condition.

Condition
The first floor condition varies from poor to fair. Some flooring areas were observed to be fairly stout and substantial and some areas appeared to be worm eaten. In one area in the southwest corner of the barn, the lowest ply was missing altogether, exposing the middle ply. Most of the exposed beams supporting the floor are worm damaged. The center beam has sagged to a great extent.

Analysis
The floor is currently not suitable for any type of occupancy. Additional structural supplementation and reinforcing work will be required during repairs to meet code requirements for occupancy.

Second Floor

Description
The second floor consists of 1 ply of 1" full thickness sawn boards installed over the supporting beams. The boards run the length of the structure (east-west).

Condition
The first floor condition was fair to good. The floor was "bouncy" due to the span length of the floor boards, but the boards did not appear to be deteriorated.

Analysis
The second floor appears to be newer than the other parts of the structure and was likely added for extra light storage. Additional structural supplementation and reinforcing work may be required during repairs to meet code requirements for occupancy. Alternatively, the floor boards could be removed.

ITEMS OR AREAS OF CONCERN

Replace rotted wood

Replace all wood damaged by rot. Select areas of the timber sill below the main door should be replaced.

Time frame for this work Prior to any occupancy

Replace severely beetle-damaged wood

Replace all severely beetle-damaged wood. In general, all wood timbers at the first floor with beetle exits holes on any of its surfaces should be replaced.

Time frame for this work Prior to any occupancy

Investigate minor beetle-damaged wood

Determine the extent of damage to the wood members by scanning with a non-destructive testing device. Replace members as necessary.

Time frame for this work Prior to any occupancy

Reinforce timber connections

The connections between members should be evaluated for the wind loads required by the current Minnesota State Building Code and

reinforced as necessary if the structure is used for any occupancy other than agricultural operations.

Time frame for this work Prior to any change in occupancy

Correct and/or stabilize main beam line deflection

Investigate the cause of the main beam line deflection. Correct deflection by jacking (if deemed appropriate). Provide new, correctly sized, frost footings at the interior beamline if existing footings are deemed inadequate. Provide new wood posts to replace existing rotted and missing wood posts.

Time frame for this work Prior to any occupancy

Repair and monitor stone masonry wall

Repair deteriorated mortar at the stone foundation walls, typically at the interior. Repoint with appropriate mortar. Monitor the deflection of the south stone walls. Evidence of past movement was observed – verify that movement is not on-going.

Time frame for this work Within one year

Repair or remove second floor

Provide structural supplementation and reinforcing of the second floor framing. Alternatively, the floor boards could simply be removed (they are minimally attached).

Time frame for this work Prior to any occupancy

MAINTENANCE CONSIDERATIONS

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

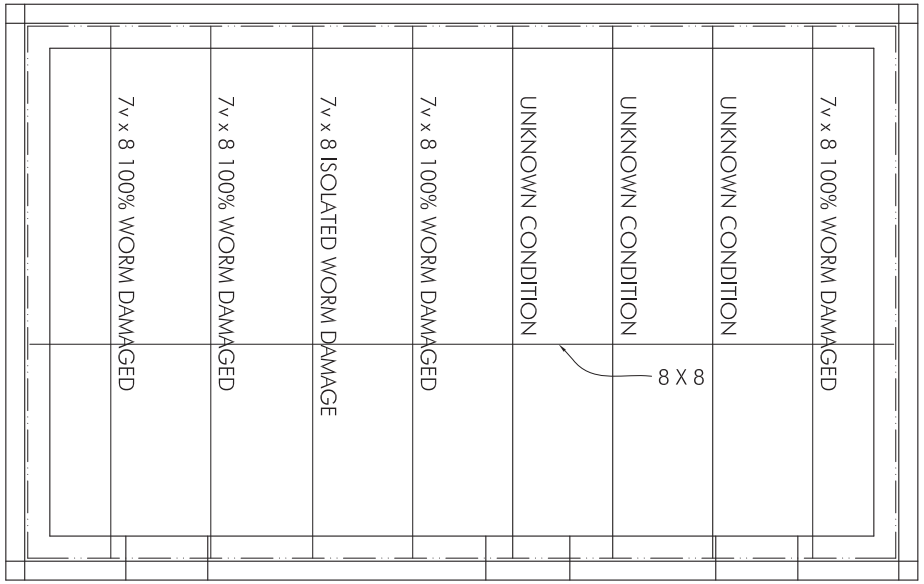
Exposed Exterior Wood

Periodically inspect and repair, if necessary, the siding, trim, windows and doors. Remove loose paint and repaint as necessary.

Time frame for this work Every 10 years

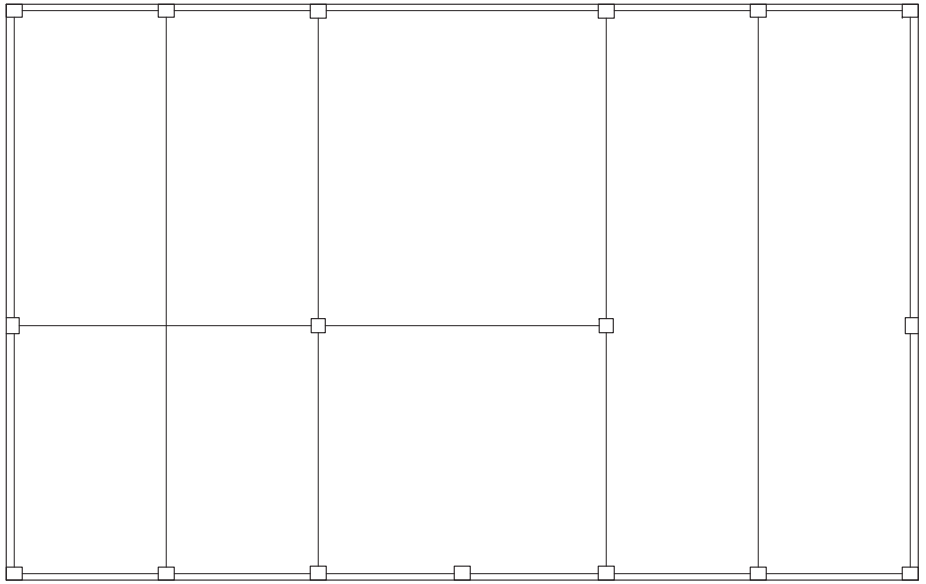
Summary

The South Barn was observed to be in fair condition overall. The timber frame and a majority of the masonry walls appear to be intact and performing adequately, however, will require more in depth investigation, design, and reinforcement if the structure is used for a public assembly occupancy. The first floor framing will likely require complete removal and replacement for any future occupancy.



1 | KNOWN FIRST FLOOR FRAMING

10.1 | 1/8"=1'-0"



2 | SECOND FLOOR FRAMING

10.1 | 1/8"=1'-0"

0 2 4 8

Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

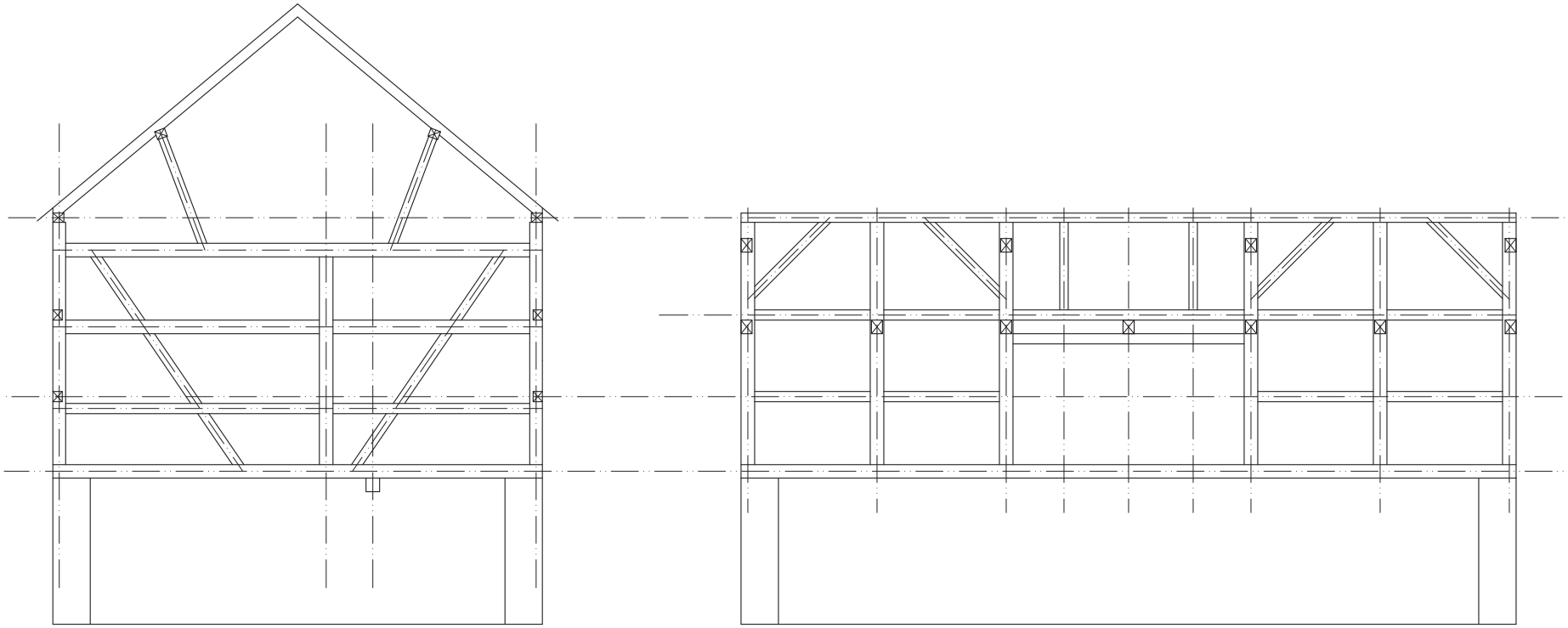
SOUTH BARN

DATE 07.28.2017

DRAWN Mattson Macdonald Young

FRAMING PLANS

10.1



1 | END CONDITION FRAMING
10.2 | 1/8"=1'-0"

2 | NORTH WALL FRAMING
10.2 | 1/8"=1'-0"

0 2 4 8

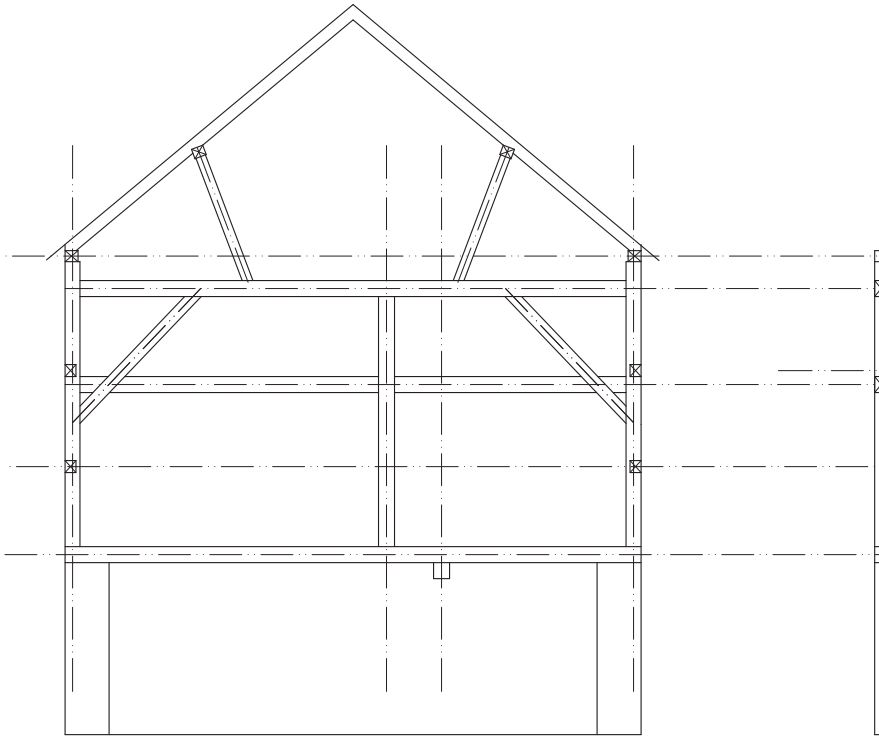
Andrew Peterson Farmstead HSR
Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

SOUTH BARN

DATE 07.28.2017
DRAWN Mattson Macdonald Young

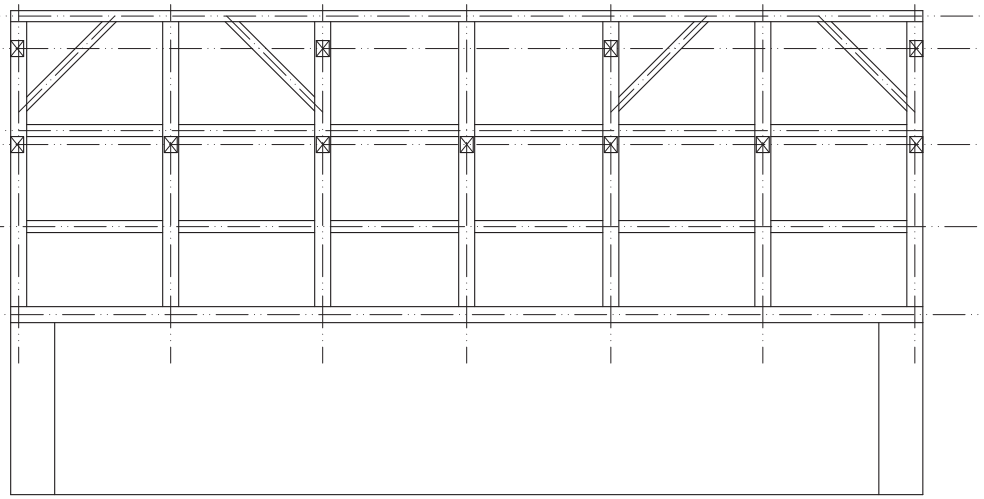
FRAMING ELEVATIONS

10.2



1 | MID CONDITION FRAMING

10.3 | 1/8"=1'-0"



2 | SOUTH WALL FRAMING

10.3 | 1/8"=1'-0"

0 2 4 8

Andrew Peterson Farmstead HSR

Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

SOUTH BARN

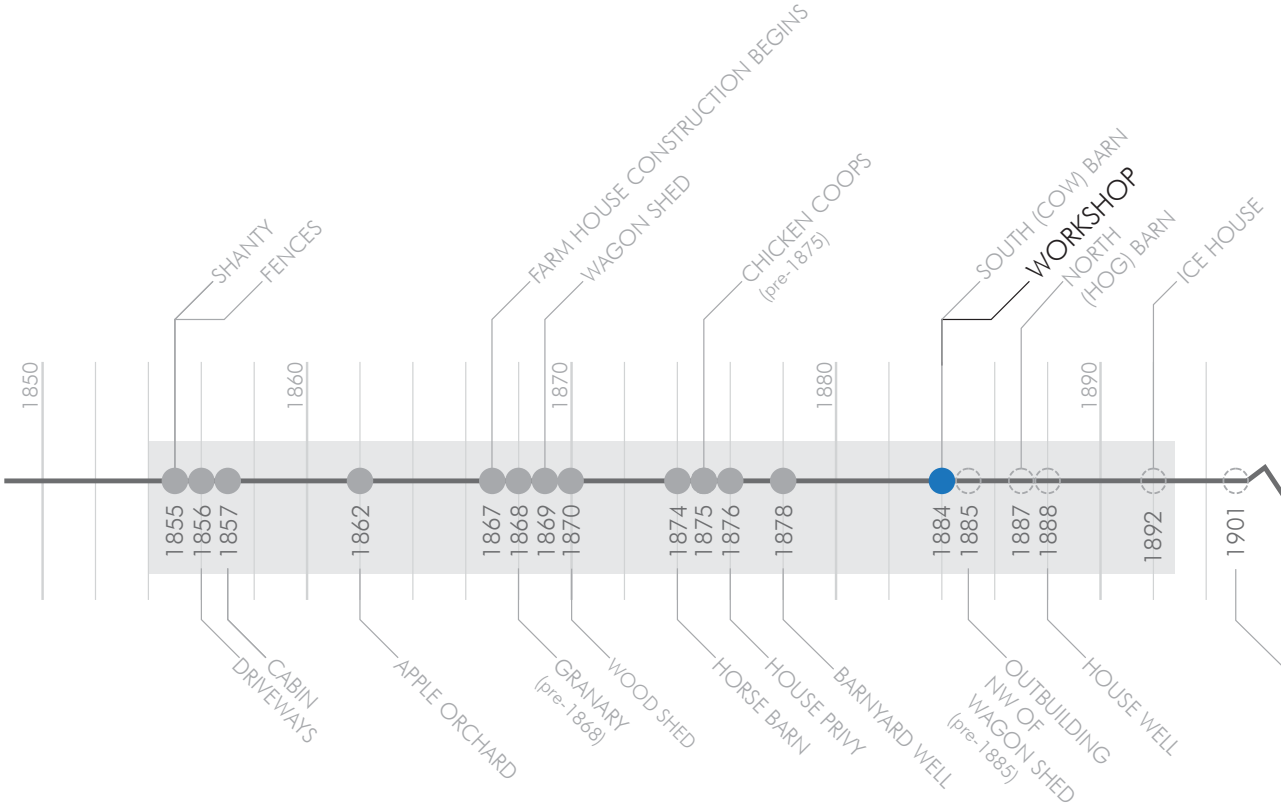
DATE 07.28.2017

DRAWN Mattson Macdonald Young

FRAMING ELEVATIONS

10.3

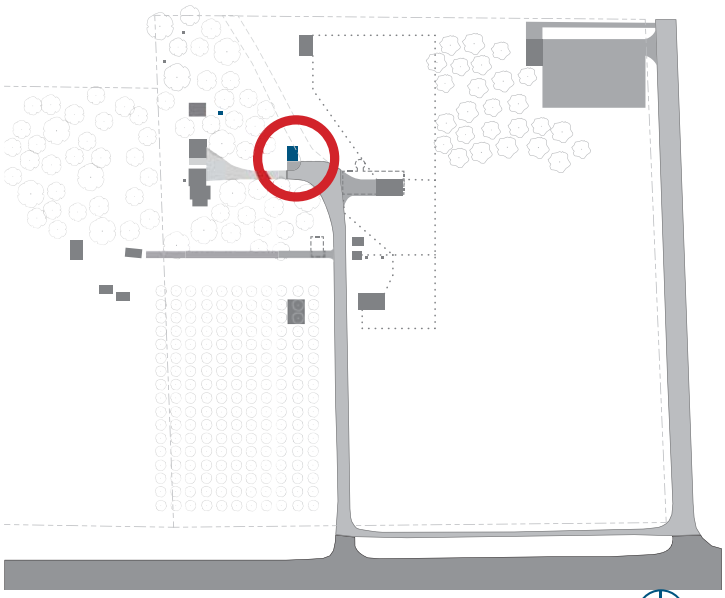



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FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH
(HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

WORKSHOP



"Axel and Carl cut down the trees and cleared off the place where our work shop is to be."
-June 2, 1884



Site Plan (no scale)

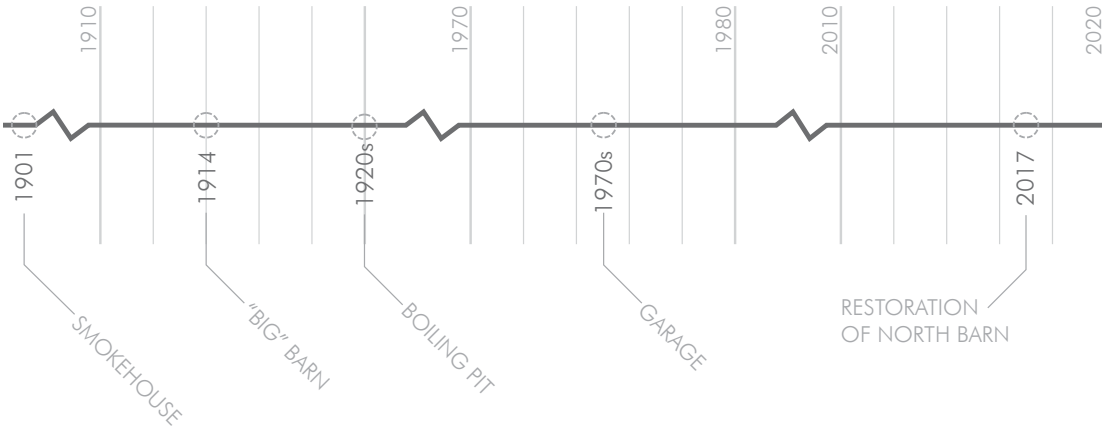




Figure 116: 1969 photograph, Workshop visible in the forground to the north (left) of the driveway.

WORKSHOP, 1884

Condition: No longer existing
Contributing to Historic District: Possible if reconstructed

Axel and Carl, two of Andrew Peterson's sons, started to clear the space where Andrew wanted to build a workshop in 1884.[163] Andrew Peterson and his sons did carpentry, painted, and repaired various things in the shop constantly.

Historical Context for Farm Shops

By Rolf Anderson

Farm shops were important for storing tools, repairing equipment, and maintaining the farmstead. A well-equipped shop could save on operating expenses. Most farmers were constantly repairing, maintaining, and upgrading the equipment needed to operate the farm. Many farmers were excellent mechanics and most were well-versed in a variety of skills such as carpentry and blacksmithing.

Farm shops were often an independent building, but it was also common to combine the shop with an implement shed or garage. It was important for a shop to have several windows in order to provide light and cross ventilation. Windows were particularly important before electric lights and ventilating fans were available. Shops were frequently insulated and heated because farmers usually had more time for repairs and improvements during the winter.[164]

The first diary entries about the workshop are dated June 1884, when Peterson stated, "Axel and Carl cut down the trees and cleared off the place where our work shop is to be." He also noted that, Nilson made window frames for the workshop. In November and December 1884, he stated the roof had been shingled, the ceiling boards were installed, and the windows were hung. In December 1885, Peterson stated that a stove had been installed. Finally, on March 15, 1886, he noted, "I made shelves for the upstairs of the workshop." Peterson's workshop was in constant use for carpentry, painting, and repairs.

163 Andrew Peterson, *The Diary of Andrew Peterson 1855-1898*, June 2, 1884.

164 Granger, 6.137-6.139.

DESCRIPTION

Description Based on Andrew Peterson's Diaries

The Workshop, as Andrew Peterson described in his diaries, was constructed between June 1884 and December 1885. The structure he described was a two-story, likely timber-framed building with more than one double or single-hung window. The roofing was wood shingles. The exterior cladding was not described, except to note the "corner pieces."[165] The interior of the Workshop had ceiling boards, wainscoting, an interior door, as well as a stove and chimney.[166]

Description Based on Photograph of Structure Hypothesized to be the Workshop

Historic photograph show that the building hypothesized to be the Workshop was located to the north of the driveway. This building fits the description of the Workshop in Andrew Peterson's diaries and is one of the few structures on the site that have a chimney.

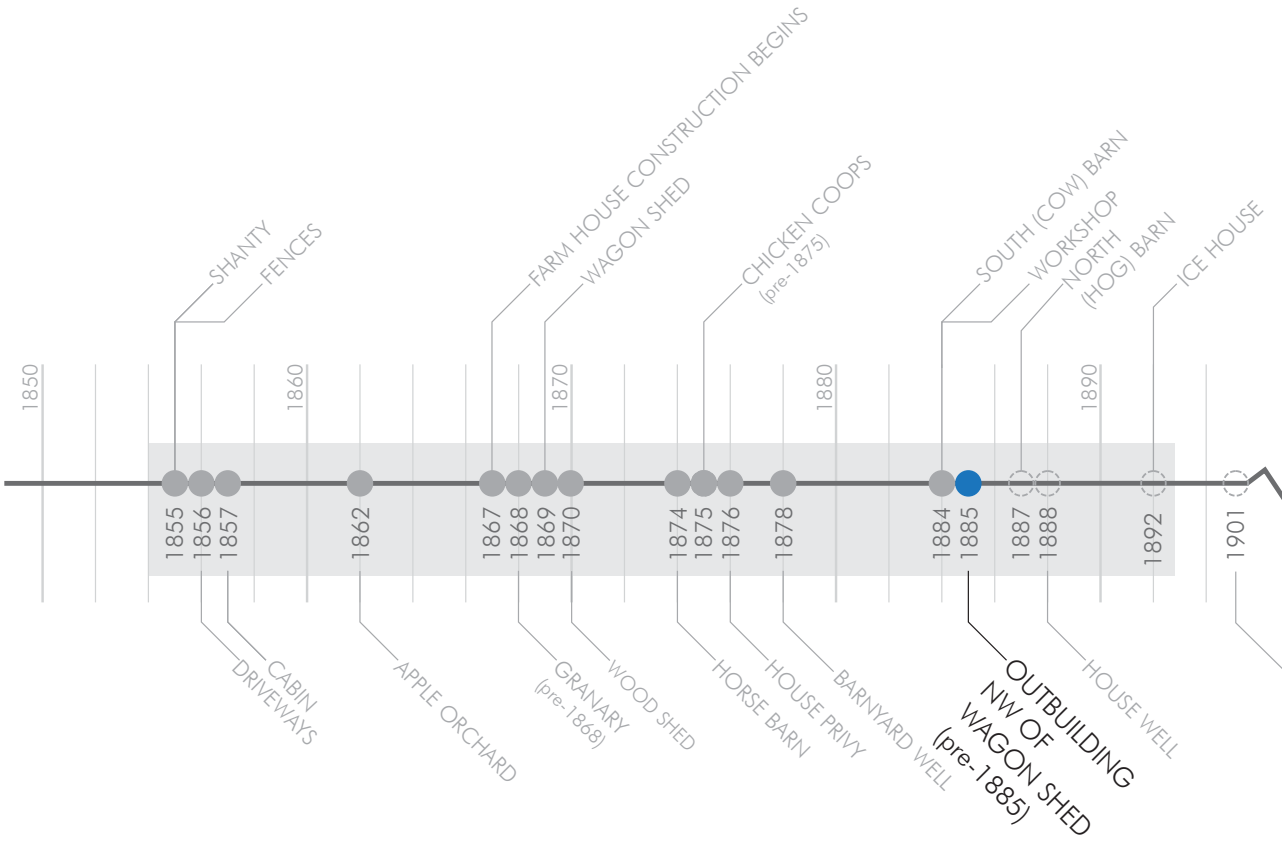
EXISTING CONDITION

The workshop no longer exists.

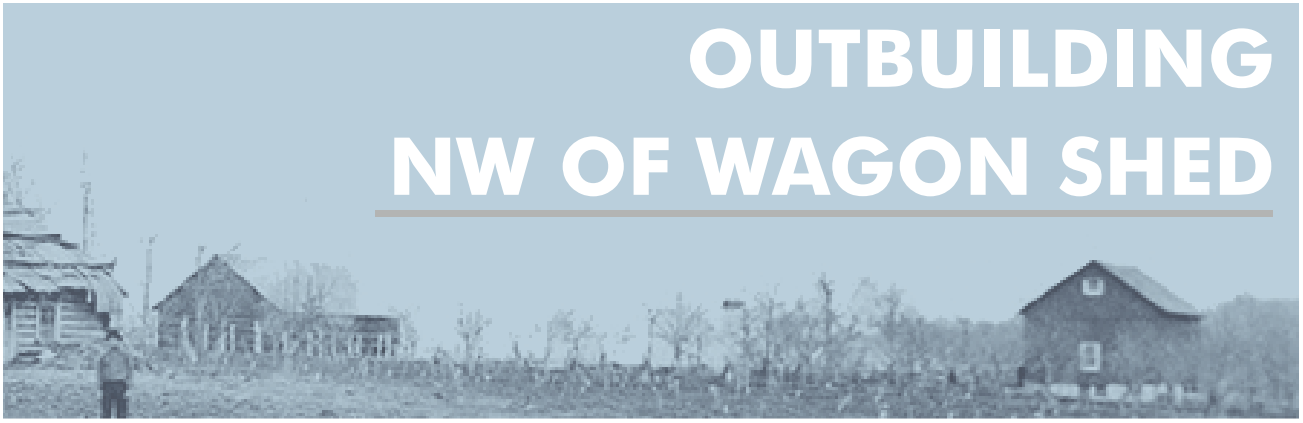
165 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, March 27, 1885.

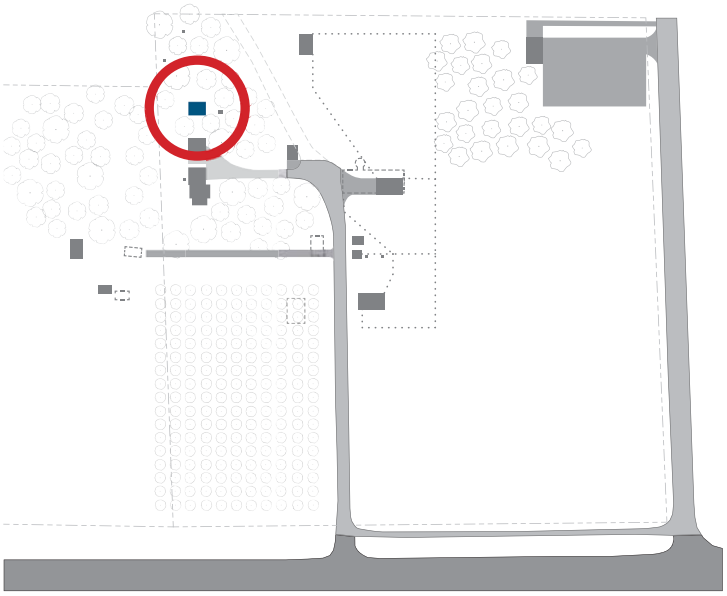
166 Ibid, November 2, 1884; December 3, 1884; December 13, 1884; December 18, 1884.




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FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
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WORKSHOP
NORTH
(HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

OUTBUILDING NW OF WAGON SHED





Site Plan (no scale)

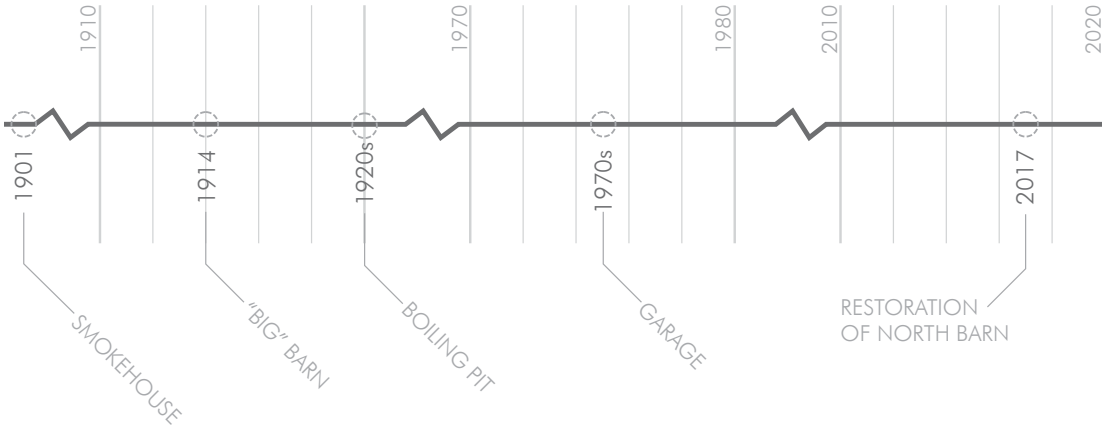




Figure 117: 1885 photograph, Northwest Outbuilding is visible to the north (far left) of the Farmhouse and Wagon Shed.

OUTBUILDING NORTHWEST OF WAGON SHED, PRE-1885

Condition: No longer existing
Contributing to Historic District: No

The history and use of this outbuilding is unidentified but it appears in the background of some of the photographs from 1885.

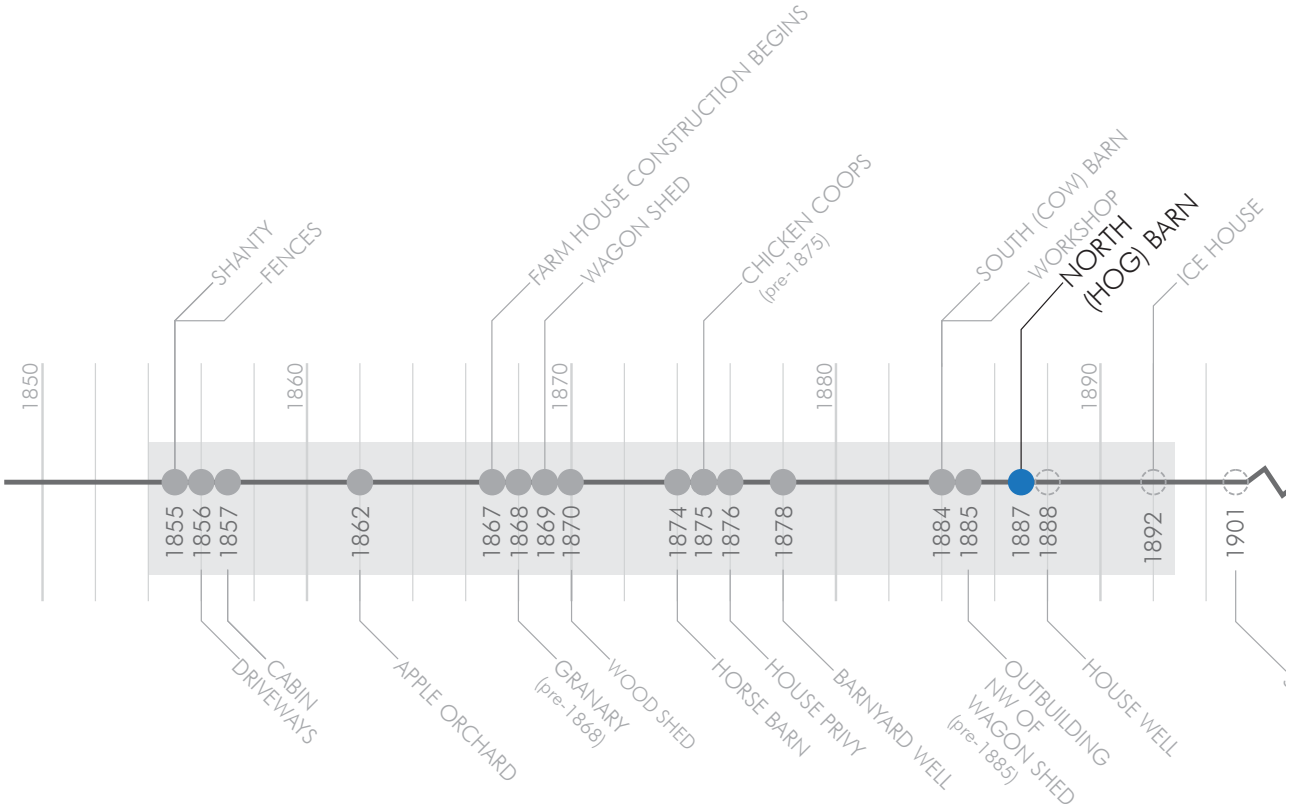
DESCRIPTION

The outbuilding is to the northwest of the Wagon Shed. It has a gable roof with a ridge that runs to the east and west and has a window on its south side. Based on historic photographs, it appears to have been painted a dark color.

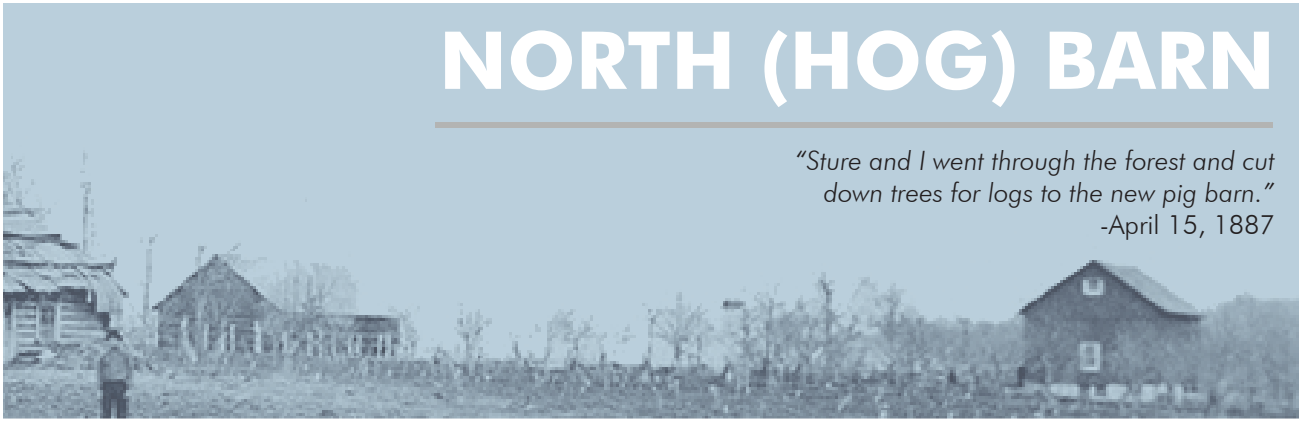
CONDITION

This outbuilding no longer exists.

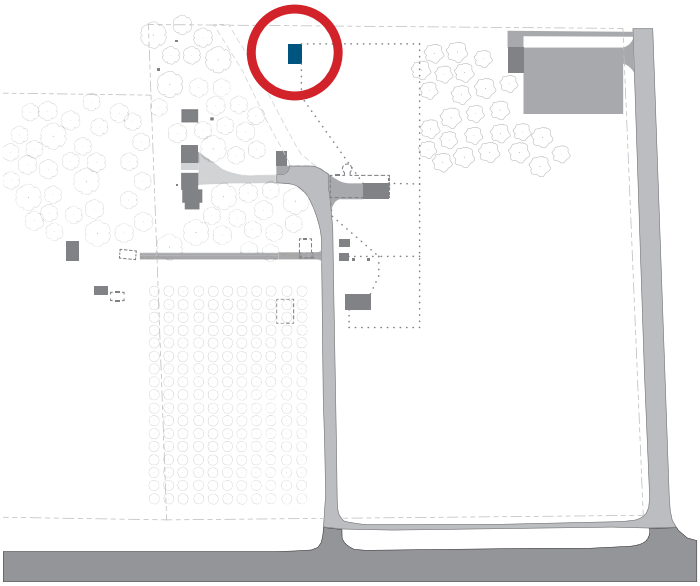



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(pre-1868)
WOOD SHED
HORSE BARN
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BARNYARD WELL
OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
HOUSE WELL

NORTH (HOG) BARN



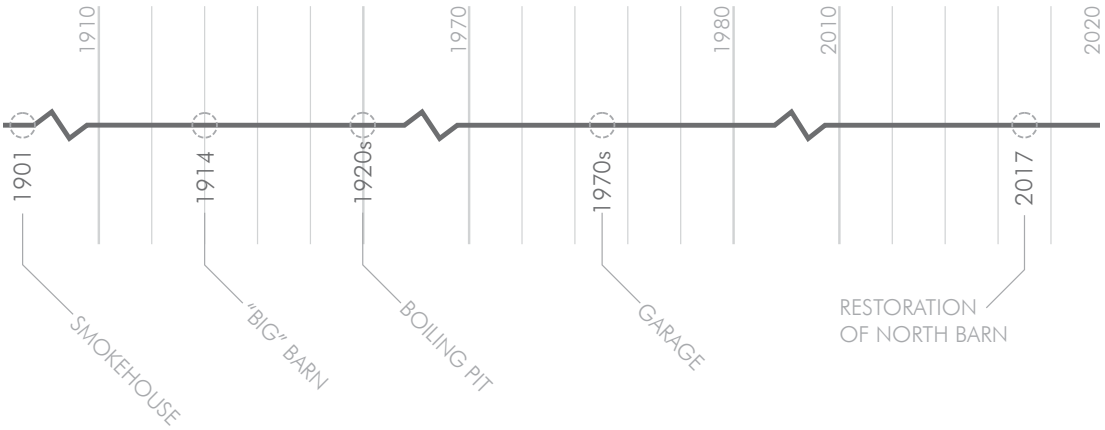
"Sture and I went through the forest and cut down trees for logs to the new pig barn."
-April 15, 1887



Site Plan (no scale)



Figure 118: June 12, 2017 in progress photograph of North Barn painting, view of southwest corner.



THE NORTH (HOG) BARN, 1887

Condition: Existing
Contributing to Historic District: Yes

Historical Context for the Hog Barn

By Rolf Anderson

During the early settlement era, Minnesota farms often kept a mixture of livestock that almost always included oxen or work horses, poultry, a couple of dairy cows, and a pig. Pigs were first reared in pastures in the summer and in very makeshift structures in the winter. They were fed farm leftovers and garden scraps. But as farmers began to diversify their operations, they often added more hogs to their farms. Hog manure was valuable for fields, and hogs were good companions to dairy cows because they could be fed the skim milk that was separated from the marketable cream. Hogs could also eat other farm by-products that had little or no market value, as well as crop residue left in the fields after harvest.

Hog were usually sheltered farthest from the farmhouse on well-drained land. Pig shelters, also called hog barns, swine houses, or piggeries, represented a range of structures from small shelters to permanent barns. Sometimes a farm needed a succession of structures because pigs could be "hard" on their housing and tended to push against the side walls, gnaw on wood, and root in dirt floors and under walls. In the settlement era, hog shelters were sometimes built with logs and other indigenous materials. Hog barns usually contained two rows of pens that flanked a central alley. In the summer, pigs could be kept in a pasture.[167]

Andrew Peterson first discusses the pig barn on April 15, 1887, when he states that trees were being cut down for logs for the new building. On August 11, 1887, he noted that, "Charles Klatt began the masonry work on the foundation for the pig barn." On October 1, 1887, he wrote, "Sture hewed the timbers for the barn. Axel and Frank dovetailed the timbers." The barn raising was held on October 13, 1887, with the assistance of Jons Nilson, Per Daniel, and William Swenson. The completion of the barn continued through 1888 and into early 1889. Finally, on March 19, 1889, Peterson wrote, "We moved the hogs into the new barn basement."

167 Granger, 6.275-6.292.

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries

As evident from the diary entries listed in the historic context, it was constructed out of wood and had a stone foundation. Andrew Peterson also described other physical characteristics of this barn. On October 18, 1887, he nailed shingles on the barn. A few days later, on October 24, he installed window casings and painted them. Andrew Peterson also recorded that his sons, Axel and Carl, painted the exterior of the barn on July 27, 1888. Once the barn was substantially completed on the exterior, Andrew Peterson worked on finishing the interior for the hogs. Axel and Sture installed a ceiling in the barn on August 29, 1888. There were also partition walls that were installed in the basement of the barn between February 26 and March 11 of 1889.

Description Based on Physical Evidence

The north barn is a timber bank barn with a stone foundation that was originally constructed in 1887. It has a rectangular footprint roughly twenty feet by thirty feet. The barn has a basement, a main level, and a loft level. The foundation walls are constructed out of various types and colors of stone, and the timber-framed walls are clad in vertical board and batten siding. The siding is painted red. The ridge of the gable roof runs in the north and south direction. The roof is clad in wood shakes.

The basement level is accessible through two doors: one on the east side and one door centered on its south side. The main level can be accessed through a pair of large doors on the west façade, and the loft can be accessed from a smaller pair of doors, also on the west façade. All doors are constructed out of wood. The north and south walls each have two windows that are centered horizontally. One window is at the main level, and one is at the loft level.



Figure 119: North facade of North Barn, 1914 Barn in the background.



Figure 120: East facade of North Barn.



Figure 121: Interior of North Barn prior to improvements, photo taken from east side of barn.



Figure 122: Southwest corner of North Barn prior to improvements, camera facing north.

EXISTING CONDITION

The north barn has recently undergone repairs and has been partially rebuilt. Work included:

- Removal of concrete masonry units from foundation and replacement with stone.
- Repair and repointing of existing stone portions of the foundation.
- Reconstruction and repair of wood beams and columns.
- Reconstruction of floor with existing and new boards where necessary.
- Repair of wood siding and replacement of rotted boards and battens where necessary.
- Window replacement.
- Repair of existing doors and hardware.
- Rebuilding of roof framing with wood salvaged from collapsed barn and new wood where necessary.
- Installation of new cedar shakes and new metal roof ridge.

The barn was rebuilt and repaired per specifications of its original use and structural load capacity. No work was done to upgrade the structural loads for a new use. The work was carefully completed and materials were replaced in-kind and only when necessary due to deterioration. The completed work leaves the barn with increased historic integrity. Plans of completed work are included in Appendix G: North Barn Construction Drawings.

TREATMENT RECOMMENDATIONS

As with other agricultural structures on the property, the treatment recommendations vary depending on the future use. Care should be taken to balance the historic integrity and the ability of the structure to share its significant features with the demands of the programming decided by the CCHS. The following considerations are offered for the future reuse and treatment of the North Barn:

- As discussed in the structural assessment of the North Barn conducted in April of 2016, it is recommended that the local building official be consulted to determine acceptable load limits without additional reinforcing or enhancement of the existing framing. This will likely require limiting the use of the building to the available load capacity.
- It was suggested in the Master Plan that Three Rivers Park District rent the north barn for a ski rental facility.[168] Rehabilitating the North Barn for a ski rental facility would require installation of modern utilities, insulation, and finishes. This work could have an adverse effect on the historic integrity of the interior of the barn that was recently improved by the work completed.



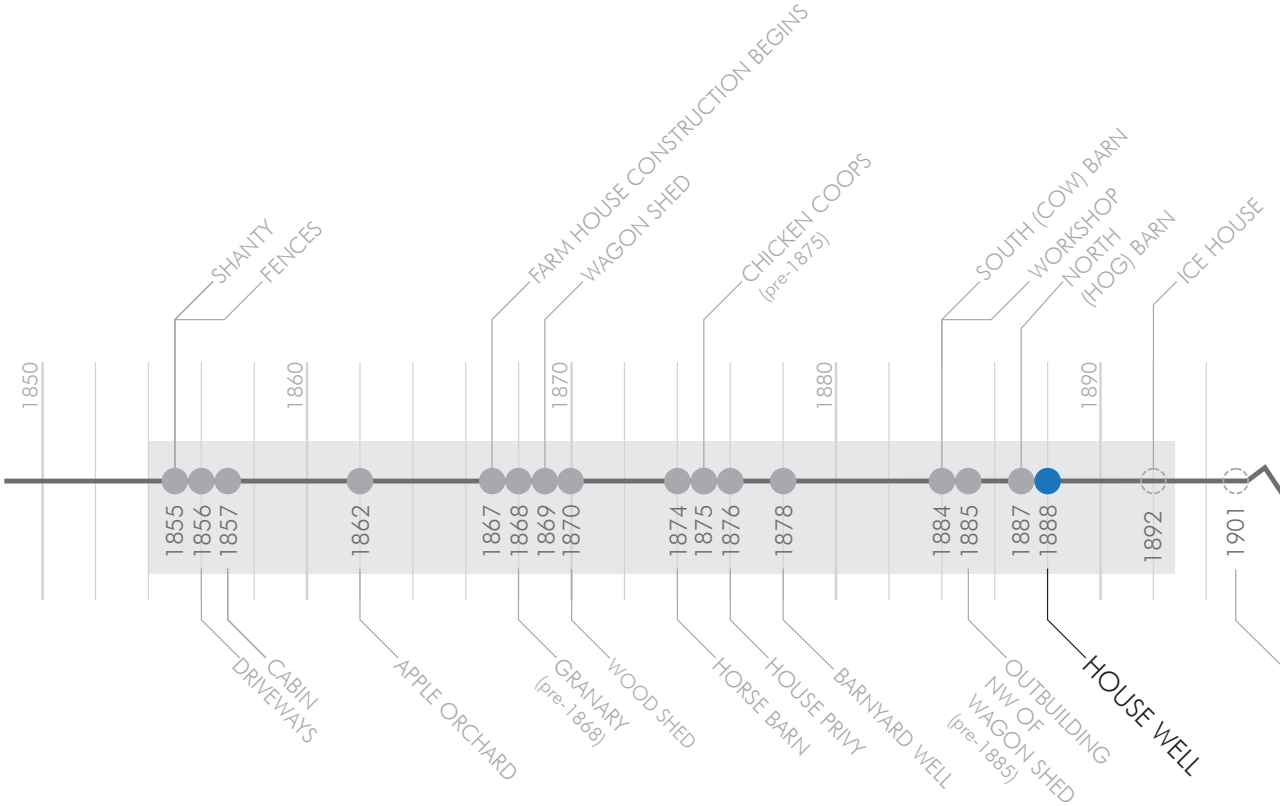
Figure 123: West facade of North Barn.



Figure 124: South facade of North Barn, taken after substantial completion of recent project.

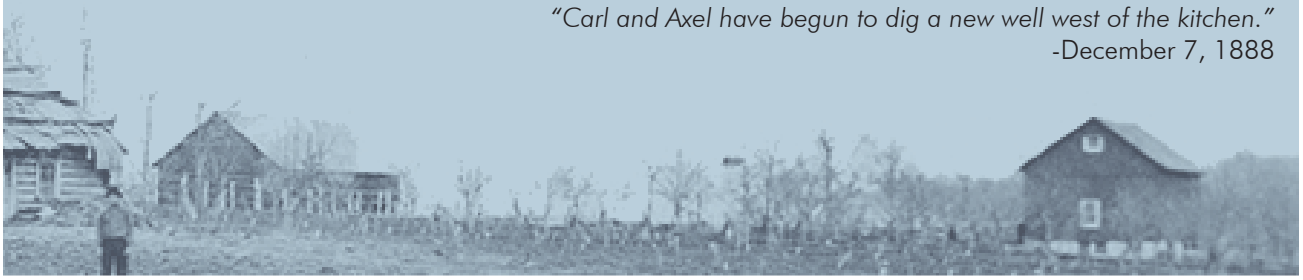
168 Thorbeck, "Historic Andrew Peterson Farmstead Concept Master Plan," 7.

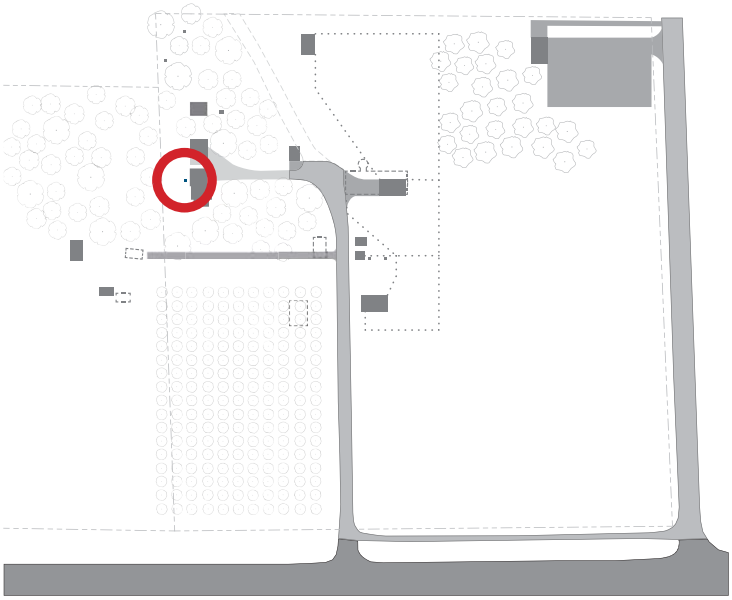



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FARM HOUSE CONSTRUCTION BEGINS
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APPLE ORCHARD
GRANARY (pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED (pre-1885)
HOUSE WELL

THE HOUSE WELL

"Carl and Axel have begun to dig a new well west of the kitchen."
-December 7, 1888





Site Plan (no scale)



Figure 125: House Well location to the west of the kitchen.

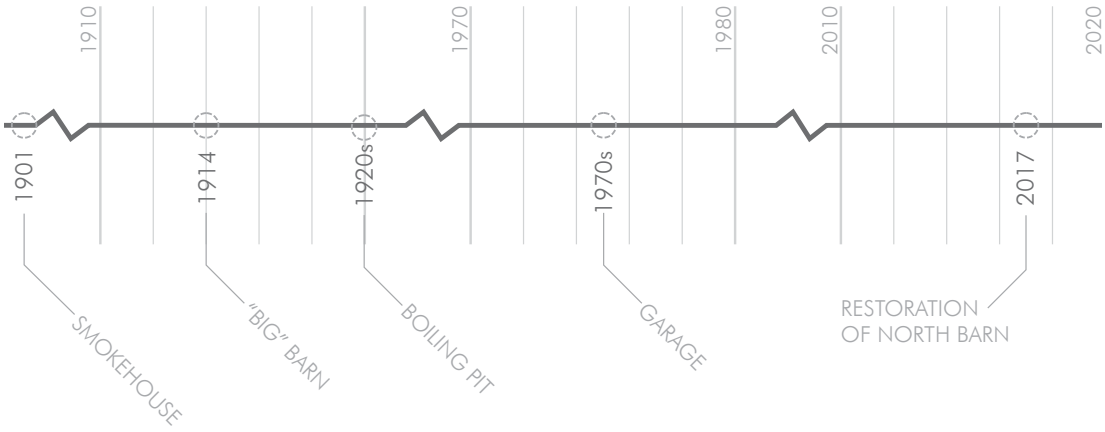




Figure 126: Condition of existing Chaska bricks at well surface.



Figure 127: Sheet metal, concrete blocks, and bricks, etc. piled up as a makeshift well cover.

THE HOUSE WELL, 1888

Condition: Existing (partial)
Contributing to Historic District: Possible if reconstructed

Historical Context for Wells

By Rolf Anderson

Essential for a supply of drinking water, wells were found on nearly all Minnesota farms. There were several types of wells depending on the locality, soil composition, water table depth, and the labor, equipment, and resources available for their construction. During the early settlement period, water could be taken from springs and streams in the summer, but in winter it was not as readily available and ice or snow was usually melted on the kitchen stove. Pumps were offered for sale in St. Paul as early as 1851, but many farmers could not afford them, or lived where they were not available. But most settlers dug wells and installed pumps sooner or later.

The earliest wells were typically dug or bored and operated with a rope and bucket. Such wells were often less than 25 feet deep. Driven wells consisted of a pipe fitted with a mesh-covered point that was forced through the soil to a layer of water-bearing sand or gravel where water freely entered the pipe. Drilled wells were more expensive but were the deepest, safest, and most long-lived. Most wells had a mechanical pump to move the water. Farm specialists recommended that wells be sited on ground that was higher than the barn and away from other possible sources of contamination.

Wells were usually covered at the surface with wood, concrete, or cast-iron covers. Sometimes a small, open-sided shed was built over the well. Dug or bored wells were often lined, or curbed, with stone, brick, tile, or concrete. Wells were sometimes used for food storage before refrigeration. Perishables

could be suspended by a rope over the water in the cool hollow of the chamber.[169]

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries

Carl and Axel began to dig the house well to the west of the kitchen in December of 1888.[170] According to Andrew Peterson's diary, he went to Waconia with his son Sture to buy a new pump for the well, while the other boys finished installing its brick lining.[171] The well also had a cover,[172] which was likely made from wood. The existence of a well that was built by Andrew Peterson by the house is significant to illustrate the importance of wells in everyday life during Andrew Peterson's time.

Description Based on Physical Evidence

The house well is located directly to the west of the kitchen addition to the farmhouse. The well depth was measured by a laser measurer in an onsite investigation and was estimated to be roughly 30 feet deep. The well is lined with Chaska brick. It is currently covered with several pieces of concrete, concrete masonry units, sheet metal, and bricks.

EXISTING CONDITION

The original cover no longer exists. Historically, the well would have been covered with wood. The bricks visible at the surface of the well have moss growing on them in some areas, and the mortar joints are in poor condition. The well pump no longer exists. The condition of the well is unknown below grade.

TREATMENT RECOMMENDATIONS

Treatment of the historic wells is dependent on CCHS's interpretation of the site and the condition of the wells. Appropriate next steps include condition assessments of the wells, testing of the well water, and further discussion of the programming and use of the wells.

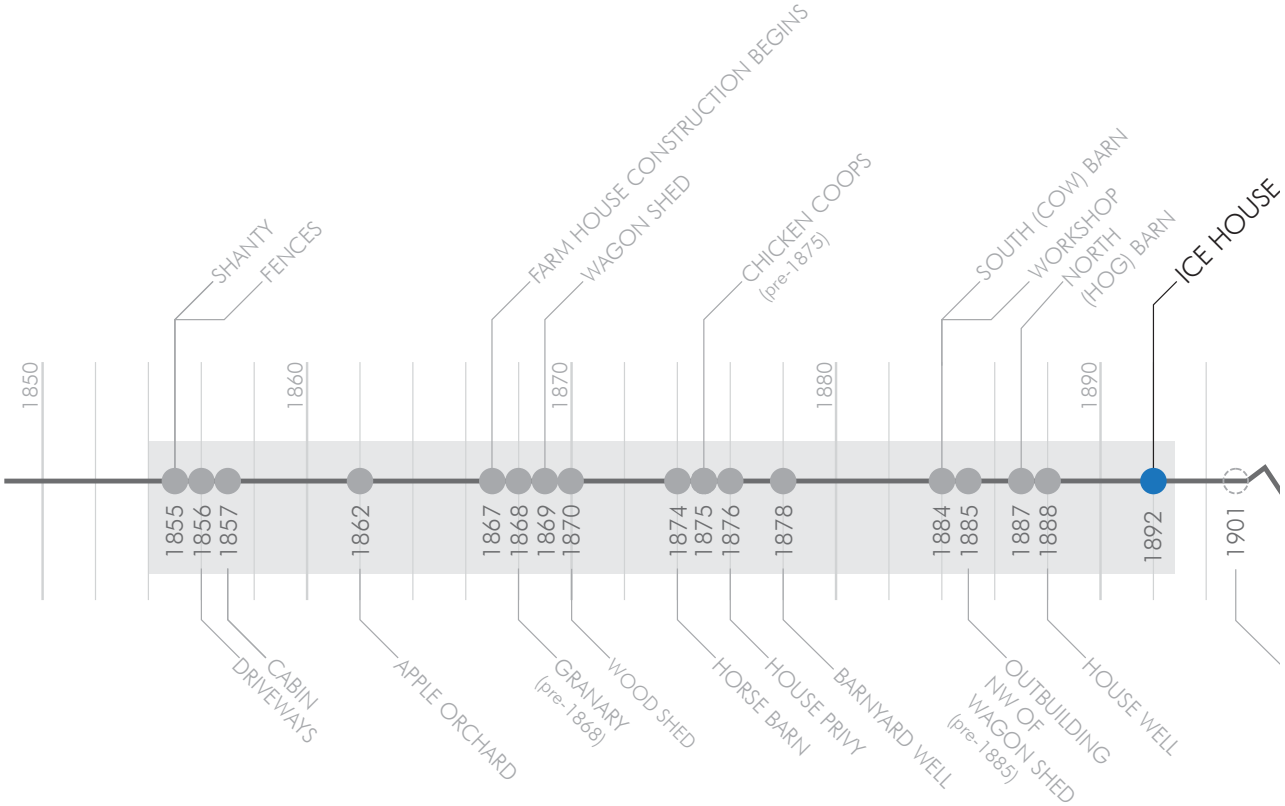
169 Granger, 6.517-6.519.

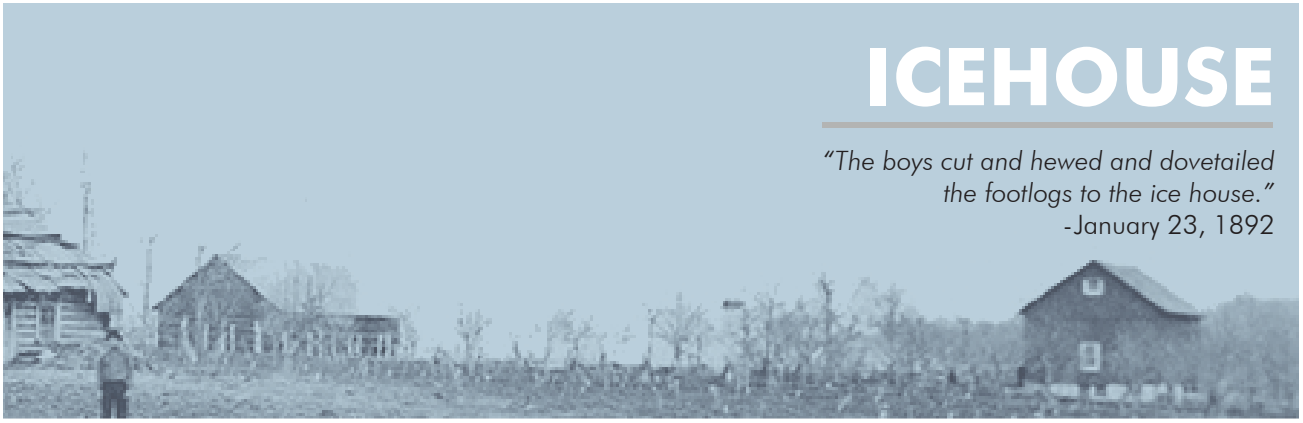
170 Andrew Peterson, *The Diary of Andrew Peterson 1855-1898*, December 7, 1888.

171 Ibid, December 28, 1888.

172 Ibid, April 11, 1889.




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FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL



ICEHOUSE

"The boys cut and hewed and dovetailed the footlogs to the ice house."
-January 23, 1892

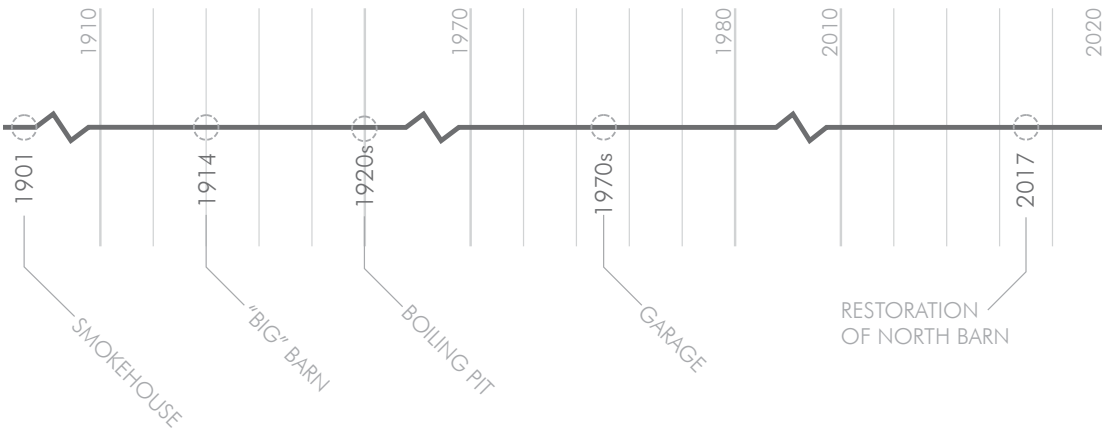




Figure 128: Emma Peterson making soap in front of building labeled the Icehouse, no date.



Figure 129: Sarah Peterson (not a relative of Andrew Peterson, neighbor) making soap in front of building labeled the Icehouse, no date.

THE ICEHOUSE, 1892

Condition: Not existing
Contributing to Historic District: Possible if reconstructed

Historical Context for Icehouses

By Rolf Anderson

Icehouses were used to store ice for cooling food before electricity and mechanical refrigeration became available. Icehouses were especially associated with milking cows and raising poultry and many were built when farms diversified. Milk had to be quickly cooled and then stored cold. Chunks of ice were floated in the milk house cooling tank, for example, to quickly cool the warm, raw milk. Eggs gathered from the hen house also needed to be quickly cooled and then stored for several weeks in cold conditions.

In Minnesota, ice was readily available in the winter from lakes and streams. The simplest icehouses stored cakes of ice buried in insulating material, such as loose sawdust or dry planer shavings, available from saw mills. Icehouses were usually free-standing structures built with wood or masonry and covered with a gable roof. Good drainage and convenience to the farmhouse were the main factors in their location.[173]

The icehouse on the Peterson farm was built in 1892. On February 12, 1892, Peterson wrote, "All the boys sawed ice on Clearwater Lake and hauled it home."

173 Granger, 6.301-6.302.

PHYSICAL DESCRIPTION

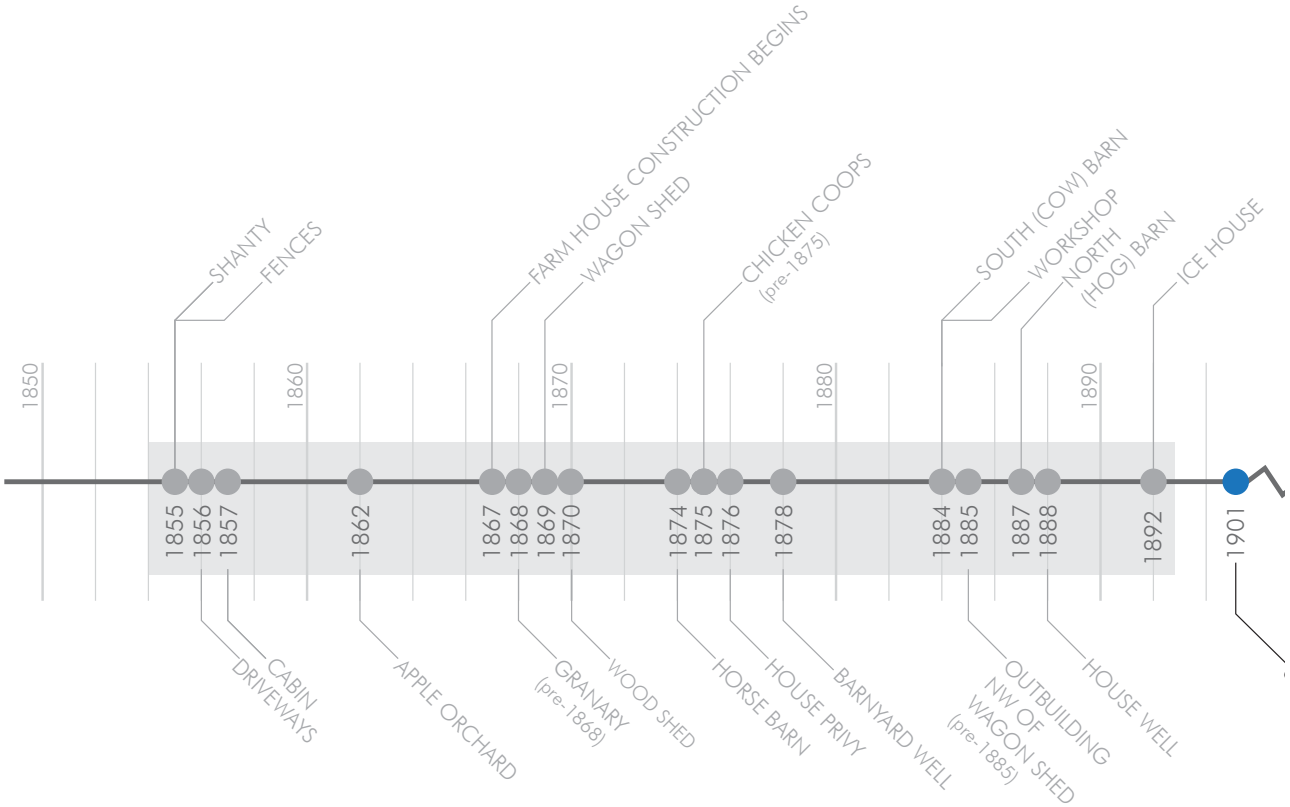
Description Based on Andrew Peterson's Diaries

The icehouse was constructed in 1892 by Andrew Peterson and his sons. Athough two photographs exist that are labeled as photographs of the icehouse, we do not have definitive evidence to confirm that the photographs are in fact of the icehouse. However, written descriptions from Andrew Peterson's diary exist that catalogue its construction. According to the diary, they began preparing the footlogs to the icehouse on January 23, 1892. The diary entries mention that the icehouse was a log structure that was covered on both the interior and exterior with wood boards. The exterior siding was nailed on and rafters were put up in February of 1892. On February 22, 1892, the icehouse was substantially completed when the boys finished shingling the roof. However, small projects continued over the next couple of years, and doors were added in March of 1894. It was painted later that year in early June, and a partition was constructed in the interior in January and February of 1896.

EXISTING CONDITION

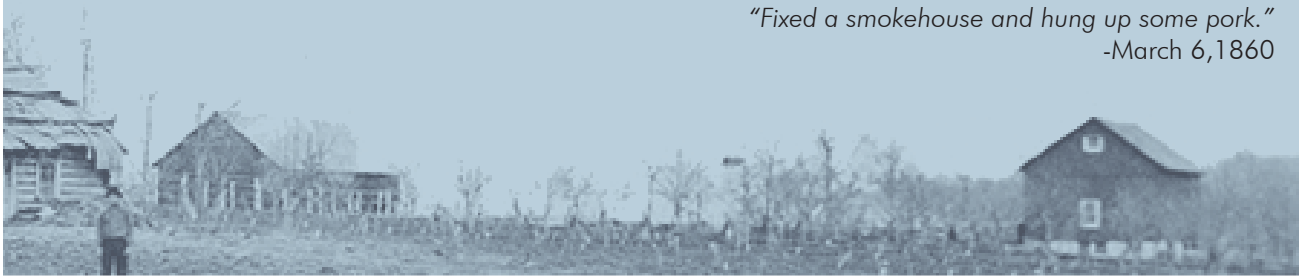
The Icehouse no longer exists.

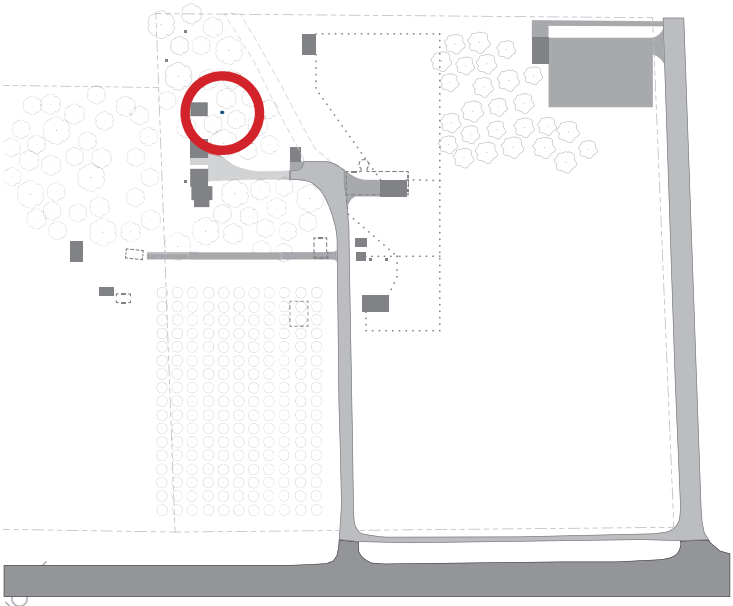



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1862 APPLE ORCHARD
1867 FARM HOUSE CONSTRUCTION BEGINS
1868 GRANARY
(pre-1868)
1869 WAGON SHED
1870 WOOD SHED
1874 HORSE BARN
1875 HOUSE PRIVY
1876 BARNYARD WELL
1878 CHICKEN COOPS
(pre-1875)
1884 SOUTH (COW) BARN
1885 OUTBUILDING
NW OF
WAGON SHED
(pre-1885)
1887 WORKSHOP
1888 NORTH
(HOG) BARN
HOUSE WELL
1892 ICE HOUSE
1901

SMOKEHOUSE

"Fixed a smokehouse and hung up some pork."
-March 6,1860

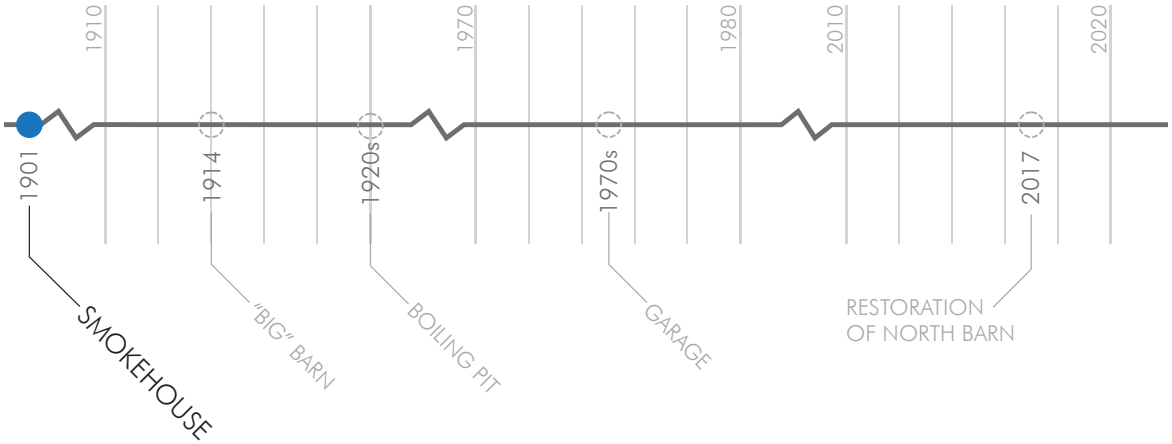




Site Plan (no scale)



Figure 130: Southeast corner of Smokehouse, showing wood vent on east facade.



ORIGINAL SMOKEHOUSE, 1860
EXISTING SMOKEHOUSE, 1901

Condition: Existing
Proposed treatment: Restoration
Contributing to the Historic District: No

Historical Context For Smokehouses

By Rolf Anderson

Smoking meat, like canning meat, was an important method of preserving food before refrigerators and freezers became widespread. Smoking also imparted extra flavor. Many farms smoked meat in the late fall when seasonal grasses were dormant, in part to reduce the number of animals that needed to be fed over the winter.

Smokehouses ranged from simple contrivances to well-built permanent buildings. Regardless of the variation in types, four factors were common to a well-functioning smokehouse: it needed to be fireproof, have a good ventilation system so the temperature could be controlled, hold the meat high enough so that it would be smoked rather than cooked, and be insect free. The smokehouse was usually built in a location convenient enough to allow it to be constantly monitored while in use, but far enough away from other buildings to pose no risk of fire.[73]

On May 2, 1862, Peterson wrote, "Hung up some pork in the smokehouse."

DESCRIPTION

Description Based on Andrew Peterson's Diaries and Farmstead Ledgers

Andrew Peterson describes his smokehouse in five entries in his diaries. The entries are as follows:

- On March 6, 1860 he wrote, "Fixed a smokehouse and hung up the pork, etc."
- On May 2, 1862 he wrote, "First I sowed 1 ½ bushels Scottish Fife wheat, then I hung up the pork in the smokehouse and plowed some."

73 Granger, 6.465.

- On May 4, 1863 he wrote, "First I moved the smokehouse and hung up the pork and then I did various little things."
- On March 19, 1896 he wrote, "The boys worked on the corn crib. I made a door to the smokehouse. In the afternoon Mrs. Ahlstrom left us and went over to Broberg's house. Clear day but very cold."
- On March 21, 1896 he wrote, "The boys recovered the smokehouse, etc. I did various things. Still storming."

The farmstead ledgers were maintained after Peterson's death and included an entry on October 23, 1901 as follows, "Paid C. Klatt for building a smokehouse, $5.50".

There are several reasons why it is likely that the existing smokehouse dates to 1901, rather than 1860:

- Typically, Peterson described the procurement of building materials, either harvesting or purchasing, in diary entries prior to construction projects. In the time leading up to March 6, 1860, Peterson records tasks that include preparing materials for constructing a corn crib of wood, but there is no mention of purchasing bricks in the time leading up to March 6, 1860 (with or without specific mention of the smokehouse).
- Masonry is a highly skilled craft. Peterson hired masons for the brick and stone construction on the farmstead, with the exception of lining water wells. There is no mention of hiring a mason in the time leading up to March 6, 1860 (with or without specific mention of the smokehouse).
- Masonry is also dependent on warm weather. One ingredient of mortar is water. If mortar freezes while curing, the mortar will crack and deteriorate. It would have been unlikely that Peterson would have constructed a masonry structure, however small, during very early spring when the chances of temperatures falling below freezing are great.



Figure 131: Southeast corner of Smokehouse, with terms labeled.



Figure 132: West facade of Smokehouse, with terms labeled.

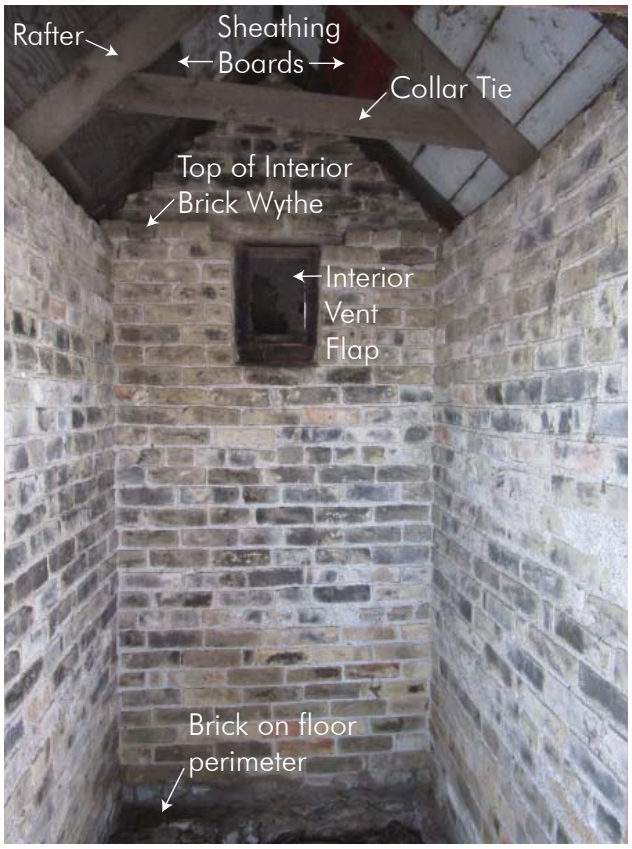


Figure 133: Interior of Smokehouse, with terms labeled.

- While it is possible to move a masonry structure, it would have taken great effort and would not have been something Peterson would have likely been able to do single-handed. There is no mention of anyone helping him move the smokehouse in 1863. Peterson routinely recorded the assistance he received from others, paid and unpaid.
- It is unclear if the March 21, 1896 entry means that the boys "re-covered the smokehouse" (as in "replaced the cover" or "worked on the covering or cladding") or if they "recovered the smokehouse" (as in "make well again"). If the meaning was the former, this would indicate a structure with cladding, perhaps wood, rather than a masonry structure.

Description Based on Physical Evidence

The existing 1901 smokehouse is located to the northeast of the Farmhouse. It is constructed primarily out of Chaska brick and wood, and has a gable roof. Its small, rectangular footprint measures about five feet by six feet. It is roughly nine feet in height at the peak of its roof. The brick walls are two wythes thick for most of the structure. At the triangular portions of the gable ends, the walls are only a single wythe thick. The bottommost row of brick is a header course. Subsequent courses are in a running bond.

The west façade contains the wood door. The door has a simple wood frame and threshold. The lintel of the door consists of two boards. The door itself is a z-brace style door constructed out of four vertical boards. It is about 26 inches wide by 67 inches high and has two metal tee hinges on its the north side. There is a small piece of wood nailed to the west side of the door for a handle. Another wood piece acts as a pivoting door latch on the south jamb. The inside of the door has two horizontal boards that are about ten inches from the top and

bottom of the primary vertical door boards. There is one reinforcing piece of wood that is nailed at a diagonal, called a half-buck. There is also a small rectangular opening in the center of the door with a wood cover.

The east façade contains a single wooden vent that is centered in the wall, about five feet above grade. The vent is made entirely of wood with a simple board sill, jambs, and header. The vent flap is also wood.

The north and south facades contain no openings, and are constructed completely out of brick.

The gable roof of the smokehouse sits atop wood framing. The ends of the north and south wall plates are exposed on the east and west façades, creating the look of a return soffit. The easternmost and westernmost rafters sit directly on top of the masonry, and are even with the exterior of the brick. There are two sets of primary rafters, that are horizontally braced by single board collar ties on the interior. The rafter tails are exposed, on the exterior of the building, and the eaves project out roughly nine inches from the sides of the building. There are also wood fascia boards on both the north and south sides, and the east and west gable-ends. On top of the rafters, there are wood roof sheathing boards. Wood shakes cover the sheathing boards.

The floor of the smokehouse appears to be compacted dirt.



Figure 134: Inside of Smokehouse door.



Figure 135: Underside of roof on west side of Smokehouse.



Figure 136: Smokehouse roof interior.

EXISTING CONDITIONS

Masonry

Overall, the masonry is in good condition. There is only one brick that is severely damaged, which is located on the exterior of the west side, on the south side of the door, and near the bottom. There are a few other bricks that are cracked, but this appears to be only surface damage. There is also some red paint on an area of brick and mortar to the north of the door and adjacent to the wood frame. These are not a cause for concern. However, there is some damage through the masonry joints. There are diagonal cracks from the door head to the roof. In addition, the header course of masonry at the threshold of the door has almost no mortar between the bricks.

Wood

The wood pieces appear to have been replaced over the years as they deteriorated, as they are from various periods of time. Some of the wood is coated with paint. Since this paint is of an unknown origin, it is possible that it could contain lead, or other harmful substances.

The wood door frame is also covered with paint. The outer south jamb frame has a chip taken out of it. Due to photographic evidence, it is conjectured the damage resulted from the removal of a hinge. It appears the door used to open to the south instead of the current swing to the north. The north corner of the bottom sill board has deteriorated, and there is a gap between the wood and the masonry. The door itself is in decent condition, although it is blackened at the bottom. The door hinges are in working order.

The exterior of the wood vent on the east façade is in moderate condition, and has remnants of red paint on it. The frame appears to be in good condition. It is unclear whether the vent is in working condition. The rectangular wood piece nailed to the header and the flap does not seem optimal for performance.

The interior of the vent is also severely deteriorated. Smoke blackened the interior of both the wood frame and flap.

Roof

The wood rafters and sheathing have been replaced at some point, and are in good condition. However, some wood boards are painted and some are not painted. The wall plates and fascia boards are deteriorated from water damage. There is rot on the ends of the rafter tails. The existing wood shakes are also rotting and turning green in spots due to moisture. Many shakes also appear to be loose.

Interior Fixtures

Two essential elements of a smokehouse appear to be missing from the interior of the existing building. There is no way to hang or suspend meat, and there is no clear evidence of a fire source.

Understanding the common types of smokehouses that were built during this time period help to surmise the appearance of the missing physical elements. Although there are many ways to build a smokehouse, there are two main ways that they were constructed during this time period. The first type of smokehouse had an indentation or a pit in the ground for a fire. The second type of smokehouse had built a fire directly on level ground or on a stone slab. In latter type, a stone is often installed over the fire. [74] Variations of this type have auxiliary brick ovens built in rectangular shapes off to the side of the primary walls.[75] Occasionally, smokehouses were built with a brick arch floor. The fire would be built under the arch and a few bricks would be left out to allow spaces for the smoke to escape.[76] Whatever way it is built, it is essential that there is some way to provide a heat source that is slightly defused, and allows smoke to drift upwards to the meat.[77] Since this smokehouse has no visible remnants of a pit or fire structure. It seems most likely that the fire was built directly on top of the ground. Another possibility is that there used to be more brickwork on the interior floor of the smokehouse than now exists.

The method used to create a defused heat source is independent from the apparatus used to suspend meat. Narrow iron bars were sometimes installed between the bricks to act as a platform on which to lay meat for smoking. In order to smoke hams, hooks were hung from the iron bars.

74 Ibid.

75 Ibid, 188.

76 Ibid, 192.

77 Ibid, 187.

It is surmised that iron bars existed. No physical evidence of these bars exists. Since the brick masonry has been repointed, it is likely that new mortar has erased the evidence of their existance.

TREATMENT RECOMMENDATIONS

The Carver County Historical Society has identified the desire to restore the smokehouse to working condition. Even though the existing smokehouse was built after Peterson's lifetime, and is a non-contributing structure to the historic district, it is recommended that it remain on the property and be restored to working order. The smokehouse has tremendous potential to give visitors a chance to participate in programming about historic methods of storing and preserving meat. However, the smokehouse should be carefully interpreted to make it clear that it did not exist during Andrew Peterson's lifetime.

A collaborative approach to restoration of the smokehouse between someone who specializes in smokehouses and a historic architect is recommended. Although a smokehouse expert will have specific recommendations to ensure it functions correctly, general recommendations are provided below based on the farmstead's history, research on farm outbuildings, and knowledge of building conditions. The following restoration work is recommended:

- Repoint masonry. Mortar should match existing mortar in strength, color, texture, and overall appearance. An effort should be made to make the masonry-to-wood connections at the top of the walls and roof weathertight.
- Use a cementitious crack injection on cracked bricks.
- Replace deteriorated or missing roof fascia boards in-kind.
- Replace wood roofing in-kind.
- Replace the deteriorated wood on the west vent.
- Install mechanism for hanging meat above a fire appropriate to the period of significance of the site.
- It is recommended that all existing interior paint be removed. It is recommended that the interior of the structure be left unpainted where currently unpainted. It is recommended that the exterior wood fascia boards and trim be repainted.

Structural Assessment

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

The Smokehouse is small structure constructed with brick and dimension lumber. The building is approximately 6′ x 5′ in plan dimension with brick masonry walls approximately 6′-6″ tall. The roof over the building is a gable configuration of dimension lumber. The Smokehouse was constructed in 1901.

Description

The building walls consist of 8″ thick brick masonry, a soft brick material likely Chaska brick, extending from grade level to approximately 6′-6″ above grade. The foundations for the walls could not be observed, but it is likely that the masonry walls extend only a short distance below grade and rest on concrete or stone footings.

The roof over the Smokehouse consists of 2x4 and 1x4 rafters supporting 1x board sheathing. The roof is a gable configuration with the ridge extending east to west.

The floor of the Smokehouse is dirt.

There is a small window (used as a vent?) at the rear (east elevation) and a door at the front (west elevation).

Condition

The condition of the Smokehouse is considered good to very good. The brick masonry walls exhibited only limited and isolated evidence of mortar erosion and only occasional minor cracks in the mortar and brick units.

The roof framing is considered in good condition. There was no evidence of rotting, deterioration or damage in the wood framing members. It appears that the roofing, which consisted of cedar shingles was in good condition and maintaining a relatively watertight covering.

The foundations could not be observed, but no settlement, differential settlement or unusual movement was noted in the building. It appears that the building foundations are performing well.

Analysis

No analysis was performed for the building but based on the good performance of the structure, it appears to adequately resist the gravity

and wind loads that have been imposed on the building over its lifespan. There is no reason to believe this would not be the case in the foreseeable future.

Items of Concern

There are no specific items of concern for the Smokehouse.

Maintenance Considerations

Exterior Brick Masonry Walls

Periodically inspect and repair, if necessary, brick masonry veneer. Repoint eroded mortar, re-place dislodged or loose brick.

Time frame for this work: Every 10 years.

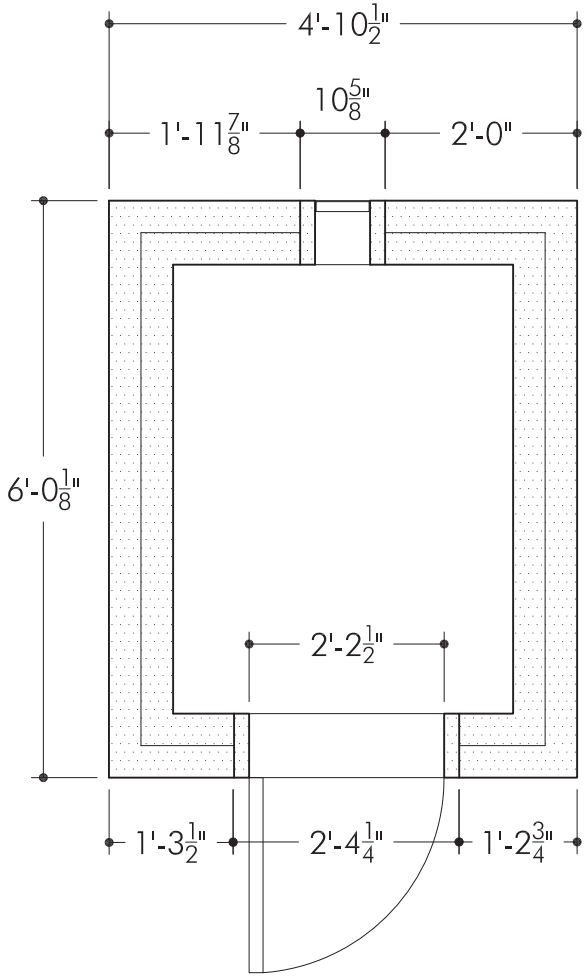
Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work: Every 5 years.

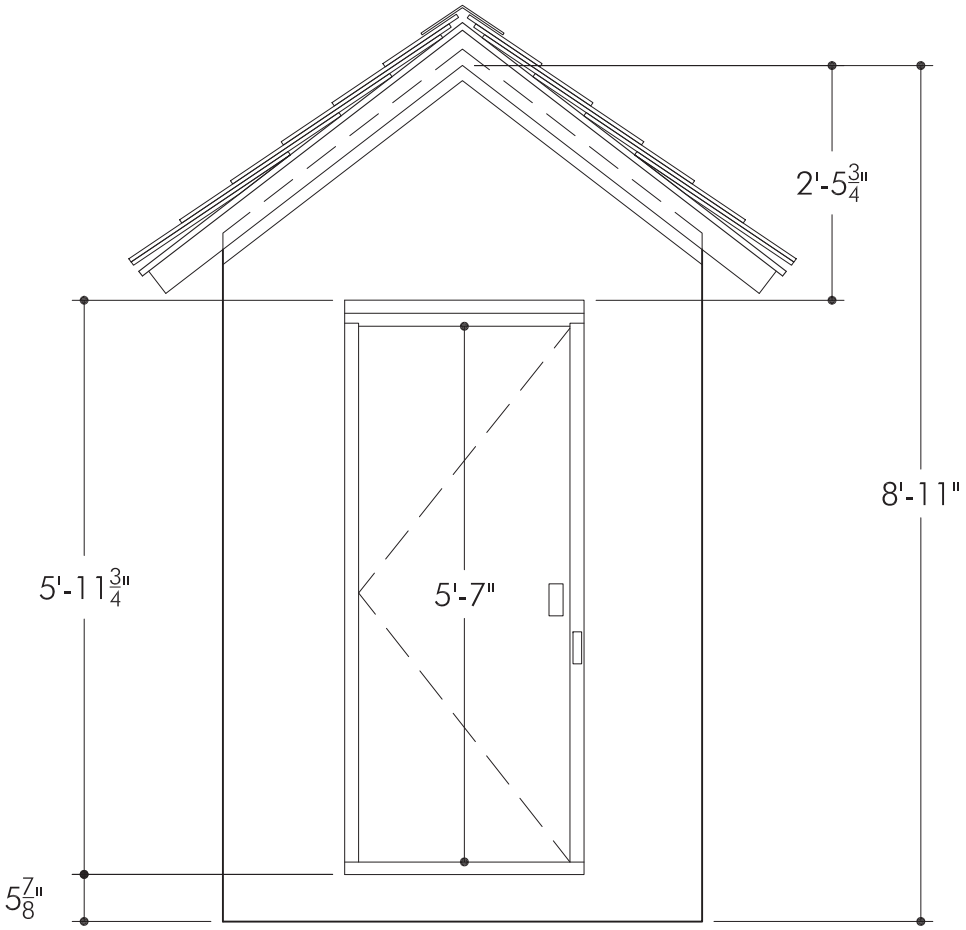
Summary

In general, the Smokehouse was found to be in good to very good condition. The original framing appears to be intact and appears to be performing adequately. Very isolated and limited deterioration of masonry was noted and recommendations for addressing these issues as part of a maintenance program for the building is provided.



1 | FLOOR PLAN

5.1 | 1/2"=1'-0"



2 | WEST ELEVATION

5.1 | 1/2"=1'-0"

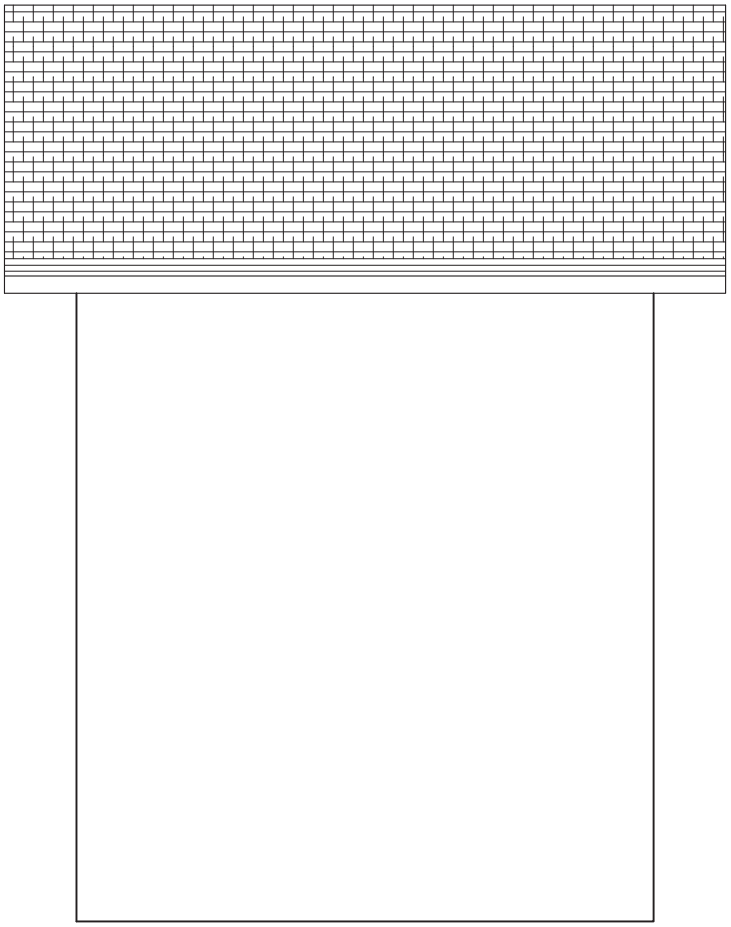
Andrew Peterson Farmstead HSR
Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

SMOKEHOUSE

DATE 07.28.2017
DRAWN MacDonald & Mack Architects

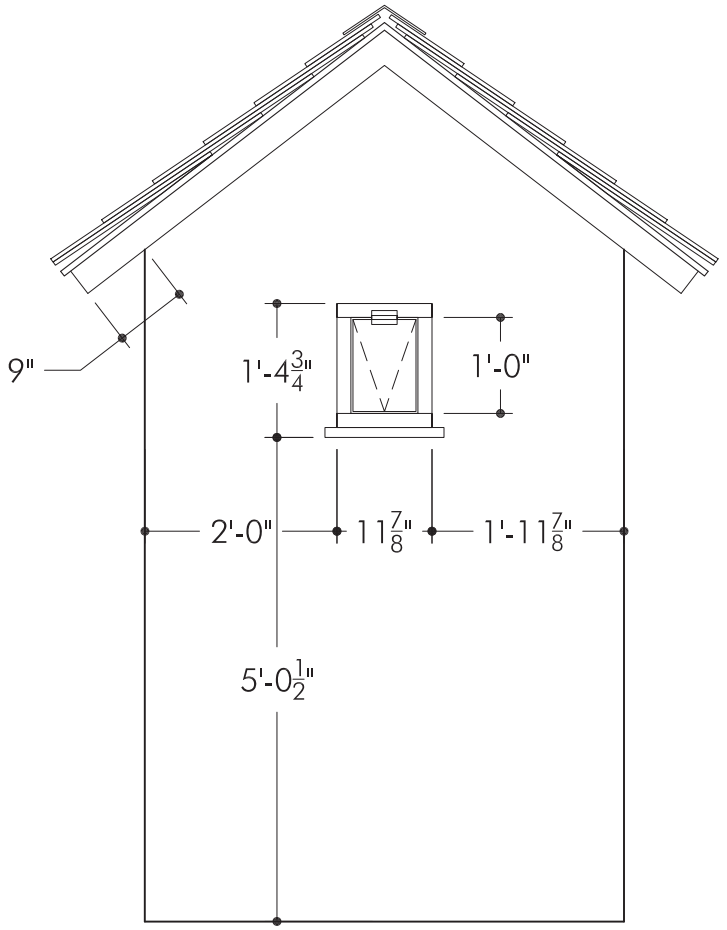
FLOOR PLANS AND ELEVATION

5.1



1 | NORTH & SOUTH ELEVATIONS

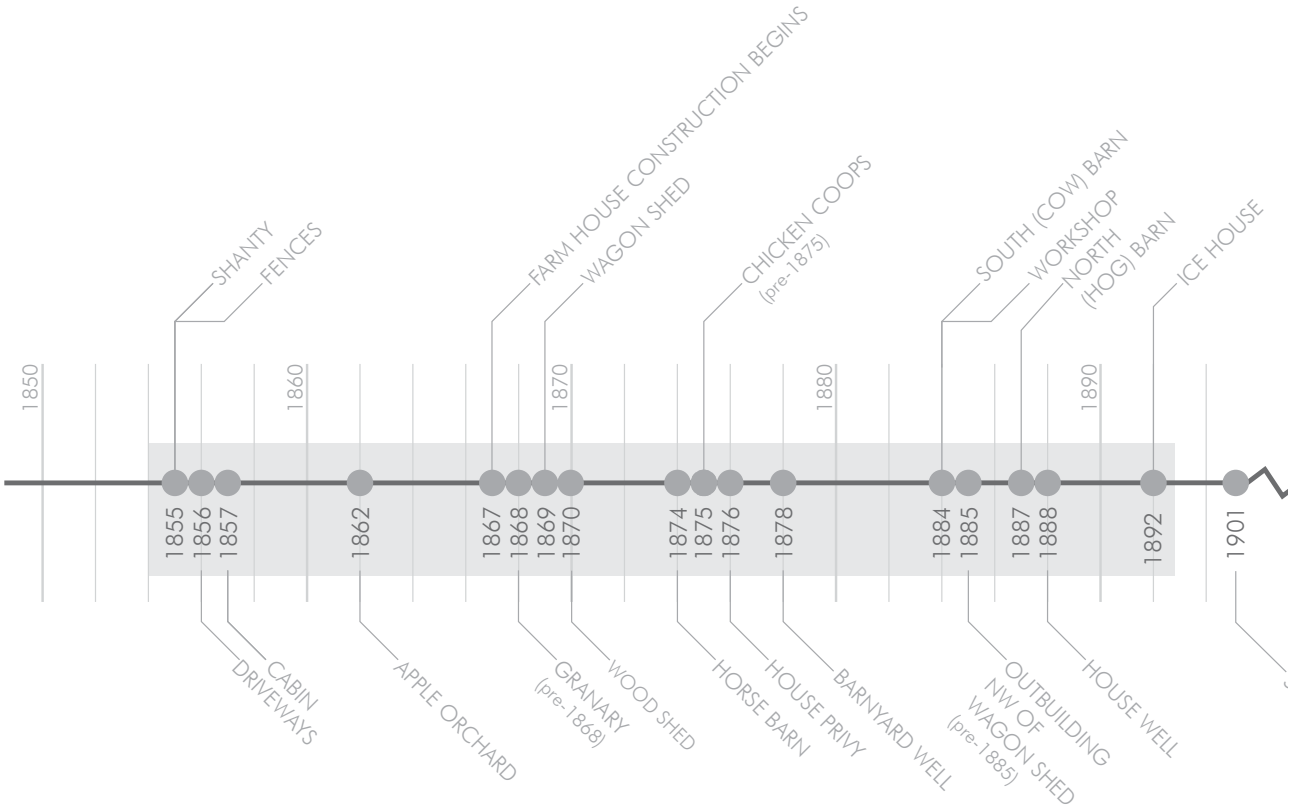
5.2 | 1/2"=1'-0"



2 | WEST ELEVATION

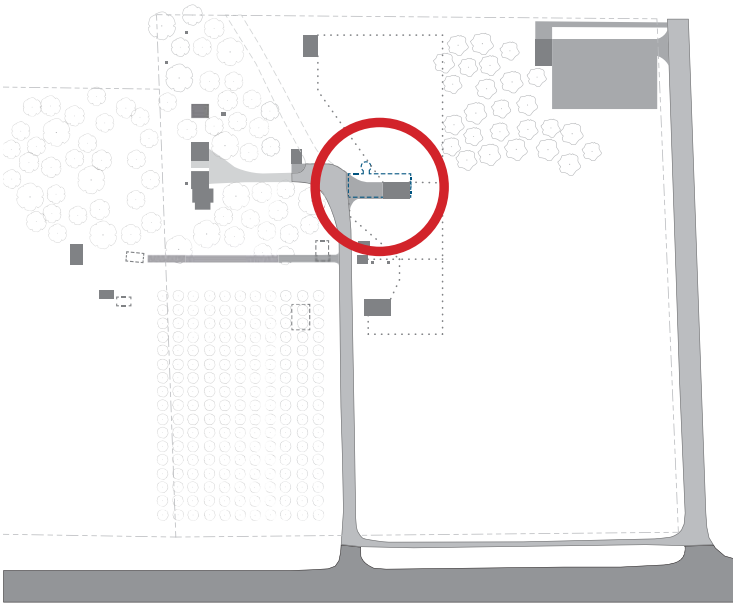
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GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

THE "BIG" BARN & SILO

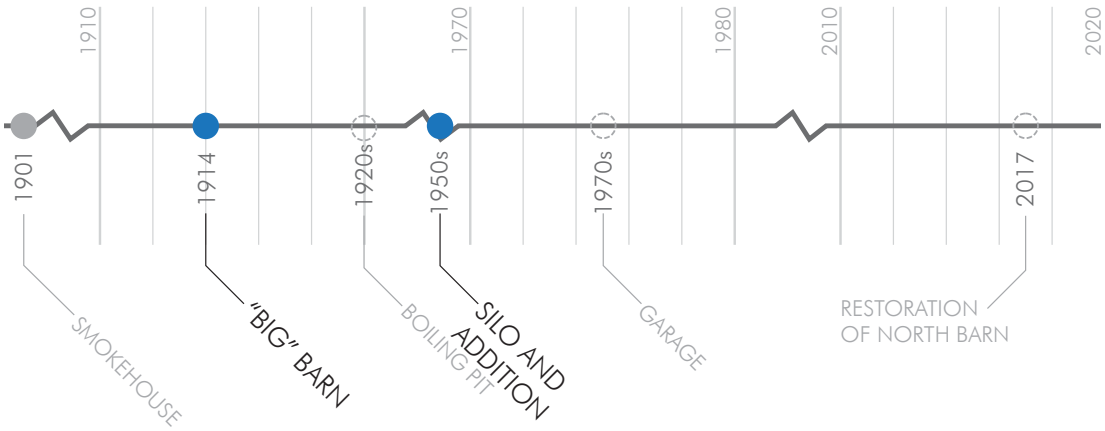




Site Plan (no scale)



Figure 137: North facade of the Big Barn.



THE "BIG" 1914 BARN
SILO, BUILT BETWEEN 1951 & 1957
ADDITION, BUILT BETWEEN 1957 & 1960

Condition: Existing
Proposed treatment: Disassemble and reconstruct the 1874 Barn
Contributing to the Historic District: No

Historical Context for the 1874 Barn (at the 1914 Barn site)

By Rolf Anderson

The 1914 barn was constructed on the site of the 1874 barn and a portion of the original foundation, and some timbers, were incorporated in the new building. The 1874 barn housed at least cows, sheep, and horses and would be considered a multi-purpose barn, which was the most common type of barn on Minnesota farms. A multi-purpose barn made economic sense for the general farmer and most barns during Minnesota's early settlement era were of this type. During this early period, multi-purpose barns were often built with indigenous materials such as logs.[174]

The first reference to the 1874 barn is dated June 13, 1873 when Peterson wrote that the site for the new barn was being cleared. Logs were acquired for the building, and on March 24, 1874, Peterson wrote that, "Nilson and A. Lundsten are chopping and dovetailing timbers." The stone foundation was completed, and on June 25, 1874, Peterson reported, "We raised the barn. We were 18 men." On December 19, 1874, Peterson noted that the cattle had been moved into the new barn. The sheep moved in on December 22, 1874. On June 4, 1875, Peterson stated, "Paul Birlion was here and I insured my barn for $500.00."

The 1914 barn is a much larger building then those built on the farm during the nineteenth century. The building represents

174 Granger, 6.223

the larger farming operations that began to emerge after the turn of the century. While the barn had an earlier silo, the current silo dates to ca. 1950. A one-story addition to the west elevation was built between 1957 and 1960.

PHYSICAL DESCRIPTION

According to the entries in the Peterson family's Cash Account Books,[175] construction on the barn started in 1914. The 1914 barn, addition, and silo were all constructed after Andrew Peterson's lifetime. Originally, a silo was constructed on the northeast corner of the barn. According to aerial photographs, the current silo, to the northwest corner, was built between 1951 and 1957. This is apparent because the silo does not appear to be in the 1951 aerial photograph, but is present in the 1957 photograph. The one-story addition to the west side of the main barn was constructed sometime between 1957 and 1960, because it does not appear in a 1957 aerial photograph, but appears in an aerial from 1960 (See Appendix L for aerial photographs of the site).

The Big Barn is located to the east of the house. It is a timber-framed, raised three-bay barn constructed in 1914. The main barn has a rectangular plan with two levels. The lower level of the barn can be accessed through the east side at the addition, and the west side of the main building. On the north side of the barn, the grade is higher, allowing access to the main level of the barn. There is a one-story addition at the west side of the building, and a concrete grain silo to the north side of the barn.

The foundation and lower level walls are constructed of varying materials and show different eras of construction. Part of the foundation walls are fieldstone that are hypothesized to have been part of the 1874 barn that previously existed at this

175 Cash Account Books. Andrew Peterson and Family Papers. Minnesota Historical Society.



Figure 138: East facade of the 1914 Big Barn.



Figure 139: West facade of the 1914 Big Barn, Silo, and Addition.



Figure 140: South facade of the 1914 Big Barn.



Figure 141: North facade of the 1914 Big Barn, Silo, and Addition.

location. Most of the foundation is constructed out of concrete masonry units that appear to be from its construction in 1914. There are also some glass blocks and some concrete blocks that have been installed more recently to infill previous openings. At the top of the foundation wall, there is a thick layer of mortar and a wood sill between the masonry and the board and batten siding.

Portions of the timber frame of the 1874 barn were used in the construction of the 1914 barn. The exterior barn walls are clad in board and batten siding that has been painted red. It has a gambrel roof with ridges that run east and west. The roof is clad in standing-seam metal. There are two metal cupolas at the center ridge of the roof to vent the barn.

The north façade is plain, with only a few openings in the lower level, that have been infilled with glass block. On the main level, there is one large opening centered on the wall, that has two doors. The doors themselves are sheathed in board and batten siding. The concrete silo is connected to the west side of the north façade at the lower level. The silo has a dome-shaped metal roof. The connection is made through a small, rectangular, concrete block addition that is visible only a few feet above the ground level.

The connection between the silo and the barn at the lower level is rectangular in plan and has only one opening on its west side. This opening has been infilled with glass block. Part of the rounded side of the silo is visible from the interior of this connection. There is also a ladder and an opening to access the silo. There is an opening in the poured concrete ceiling of the connection near the silo itself. It has been sealed with a wood board and gap filler.

The east façade of the 1914 barn has a pair of double "x" brace barn doors centered at the lower level. The doors are red with white brace boards. On either side of these doors at the lower level, there are openings that have been infilled with glass blocks. On the main level of the

façade, there are two downspouts that have been attached to the board and batten siding diagonally across the wall as ornament. At the level defined by the meeting of the roof and wall on the opposite sides, a horizontal line was created in the siding. The visual line is where two pieces of vertical boards coming together. The bottom edge of the upper section of siding is scalloped. Above the scalloped line, there are two rectangular windows with two by three divided lights.

The south façade of the barn has five evenly spaced openings infilled with glass block at the lower level. There are two shed roof metal canopies, that are each centered on one half of the façade. There is one opening centered on the façade at the main level. The opening is covered by a sliding barn door made out of wood boards. The metal track above the door allows the door to slide to the east.

The west side of the barn is similar to the east side at the upper level. It does not have downspouts as ornament, or the barn doors on the lower level. An addition encloses the lower level of this side.

The red and white painted addition is mainly constructed out of concrete, and the gable roof is covered with a standing seam metal roof. There is one door slightly to the south of center on the west side of the addition and a window on either side of the door. The north and south sides of the addition each have a single window. The east side of the addition connects to the main barn. The inside of the addition consists of two rooms that can be accessed through a central hallway. The change in grade from the exterior door to the main lower level of the main barn is resolved by concrete steps on the interior just inside of the door.

The lower level has a dirt floor, concrete block exterior walls, and timber beams. The original posts supporting the level above are wood, but several metal columns have been added as reinforcements. The underside of the wood floor boards of the level above are exposed. The lower



Figure 142: Interior view of roof of 1914 Big Barn.



Figure 143: Stalls in lower level of 1914 Big Barn.



Figure 144: Silo to lower level connection in the 1914 Big Barn.



Figure 145: Interior view of 1914 Big Barn, main level.

level of the barn was used for animal corrals. The plan consists of a central corridor running in the east/west direction, with animal stalls on the north and south sides. The corrals are a few feet away from the walls on the north side, and there is a trough that runs the entire length of the wall.

The only material present on the interior of the barn's main level is wood. The structure is exposed timber framing, and the floor, walls, and roof are constructed out of wood boards. The floor is covered with hay in some areas.

EXISTING CONDITION

The 1914 Barn is in poor condition. It is unsafe and should not be occupied until it has been repaired. Entry into the building should be limited to those inspecting and designing the repair work and those carrying out the repair work.

A detailed discussion of the condition of the structural systems can be found in the structural assessment. It is summarized here to discuss the impacts of those conditions. The wood members throughout the barn are beetle-eaten, rotten, and/or broken making the building unsafe. The roof rafters are split and the framing timbers are severely deteriorated from rot and powderpost beetle damage. The second floor timber framing connections are loose and the many of the timbers rotting. The second floor floor framing is rotten and suffering from powderpost beetle damage. The floor boards are also severely deteriorated.

The wood sill above the foundation is deteriorated severely in some areas. The wood fascia board above the north door has split and a portion of it is missing. The condition of the board and batten siding is poor overall with loose boards and deteriorated paint. The most deteriorated portions of the siding are located at the bottoms of the walls.

The masonry foundation is in good condition. There are areas of mortar loss at the 1874 stone foundation. The concrete masonry unit portion of the foundation exhibits cracking below window openings. Most of the cracks are between blocks, but several of the blocks have cracked. The cracks are likely caused by water infiltration at improperly-flashed window sills. There are also gaps and cracks at joints between different construction types of foundation wall which are likely caused by improperly detailed construction joints. Neither condition is a threat to the structure, but should not be left untreated. There are areas of the

foundation where the concrete masonry blocks are spalling, currently limited to the northeast corner of the barn. The concrete slab floor of the lower level of the barn is cracked in many areas and is not level.

The doors are in varying conditions. The doors on the east side appear to be in good condition, as well as the sliding south barn door. The north, primary doors to the main level are in poor condition. The wood boards that make up the doors are extremely deteriorated at the bottom. The doors also have metal strips around the lock, and are hard to secure.

The windows appear to be in good condition, but the paint is deteriorated.

The cupolas on the roof are in poor condition. The metal is rusted. The standing seam metal roof on the canopies is in good condition, but the framing beneath it is deteriorated. The lightning rods on the roof are no longer grounded. Wires hang over the edge of the roof.

The exterior of the addition is in fair condition. The siding, windows, and roof appear to be in good condition, but the connection between the roof and the board and batten siding on the west wall of the main barn is not adequately flashed. When snow builds up on the roof, moisture can enter the walls at this point and damage the siding.

The connection between the silo and the structure is below grade. The concrete masonry units of the connection show extensive damage. Water has infiltrated the east wall of the connection and has caused the wall to bulge. There are both vertical and horizontal cracks on the interior of the silo connection. The concrete slab making up the ceiling and roof of the connection is cracked. The window in the connection is poorly sealed.

The silo itself is missing part of its metal roof. The interior of the silo was not accessible during this study, therefore the condition of the top of the silo is unknown.



Figure 146: Framing of 1914 Big Barn, note notches in member.

TREATMENT RECOMMENDATIONS

It is recommended that access to the 1914 Barn be limited to those who are absolutely necessary for the repair of the building. To those ends, the entrances should be locked. If there is any concern about trespassing and unauthorized entry into the building, it is recommended that the building be clearly marked as unsafe for entry.

At this time, the Carver County Historical Society wishes to remove the silo and west addition, and retain the 1914 barn structure. There is a significant amount of structural work required to make the building safe and stable, with even further structural, electrical, mechanical, and plumbing upgrades to bring the barn up to code before it can be opened to the public. All work should be done in with the new use in mind, because building codes and structural loading requirements vary according to use.

Many of the structural members in the 1914 barn are clearly, severely damaged by rot and powderpost beetles. Unfortunately, there is not a suitable repair for such damage. Those members will need to be replaced. Many of the members show some signs of damage, but it is not clear the extent of that damage. Those members will need to be inspected further to assess the complete scope of replacement necessary. Based on the amount of structural damage that requires replacement, CCHS can expect that repairs to make the barn structurally stable to look similar to complete reconstruction. Refer to the structural assessment for complete, detailed information regarding the treatment recommendations for the structural components of the 1914 barn.

Regardless of what the Carver County Historical Society decides to do with the barn, it is vital that the 1914 barn be maintained in the interim so that moisture does not enter the building and cause further deterioration of the timbers from the 1874 barn. Since the 1874 barn was constructed and used during the period of signfiicance, it is important that the timbers that were salvaged from the original 1874 barn be documented. These timbers should be measured, photographed, and otherwise noted to make sure that further generations have access to the information present in the timbers before they deteriorate further or are otherwise lost. The timbers should also be treated to prevent further damage by powderpost beetles. Please refer to Appendix F: Pest Control Resources, for more information on pest treatments.

Treatment of the 1914 barn should be in accordance with its status as a non-contributing structure to the historic district. It should be interpreted as outside of the period of significance, and its treatment should not portray a false sense of history. All future work should be carefully considered so it does not create adverse effects for the existing buildings on the property from Peterson's lifetime. The CCHS and its consultants should be in contact with the State Historic Preservation Office during planning and design.

Structural Assessment

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

The Big Barn, as described within this report, consists of a two-story barn structure, a one-story addition, and a concrete silo. All structures appear to be supported by the edge of first story concrete slab-on-grade. Soil grade is located near the base of the structure along the south and east walls. At the northeast corner, grade rapidly rises to the top of the first story at the center of the north wall and gradually returns to the base of the first level around the northwest corner.

It is our understanding that the two-story barn was constructed in 1914 in the same location as a previous barn. Many of the previous barn's materials were salvaged and reused during construction of the current barn, including a portion of the first floor north wall and a majority of the timbers that make up the current barn's roof frames. The one-story addition and concrete silo were constructed at a later time.

The term "original" is utilized within this portion of the report to describe the Big Barn and its materials at the time of its 1914 construction. The term "previous" is utilized to describe the barn that the Big Barn replaced in 1914.

The Big Barn is currently unoccupied, but was previously used for farming operations. It is our understanding that the owner is interested in occupying the structure as a public assembly space in the future.

Two-story Barn

Roof Framing

Description

The roof of the two-story barn is a gambrel configuration with the ridge extending east to west. The two pitches of the gambrel roof are 8/12 (peak) and 14/12 (eaves). The roof is framed with 2" x 7 1/2" rafters spanning north to south and spaced approximately at 24" on center. A single ridge board runs along the apex of the gambrel. Rafters are supported by timber beamlines at the north and south walls and at the roof's two slope transitions. There are four total beamlines in the east to west direction. Beams and columns vary in size, but a majority of timbers are approximately 6 1/2" x 8". Each beam-to-column connection has

a pair of kickers in the east to west direction, which do not appear to be original to the structure, and a timber frame in the north to south direction. Each frame oriented in the north to south direction appears to have been reinforced with a horizontal and a diagonal brace that were also not original to the barn. The roof sheathing consists of two perpendicular layers of 1x planking. The roof covering is metal.

Condition

The roof appears to be in good overall condition. A small quantity of rafters were observed to have splits that are large enough to affect load-bearing capacity and should be replaced. Many of the columns and beams have notches and mortises at odd locations, indicating that these timbers were likely repurposed from the previous barn. Although the notches decrease the timbers' structural capacity, the timbers appear to be adequately supporting the current load. Evidence of beetle damage was observed on surfaces of a majority of the beams and columns, with severity ranging from minor above head-height to severe near the floor. Minor damaged timbers should be scanned with a non-destructive testing device to determine how much material was lost, whereas severely damaged timbers require replacement. Additionally, many of the columns and diagonal braces have partially rotted at their bases and will need to be reinforced or replaced. The connections between beams, columns, and braces appear to be supporting the current load, but have loosened over time and should be reinforced with a more reliable connection. The edges of the roof were observed to bulge outward along the north and south eaves. This movement is common for roofs without ridge beams, collar ties, or ceilings and may have been the motive for reinforcing the frames in the north to south direction.

Analysis

The split rafters, severely beetle-eaten timbers, and rotted timbers are unsafe conditions and make the roof framing unsuitable for any type of occupancy at this time. However, we performed an analysis based on the assumption that these deficiencies are repaired in kind. Our calculations indicate that the roof framing would be adequate to support the dead, snow, and wind loads required by the Minnesota State Building Code.

Second Floor

Description

The second floor framing was observed from below where there is no finished ceiling. The floor is framed with 2" x 7 1/2" floor joists spanning north to south and spaced at varying dimensions that average approximately 24" on center. Floor sheathing over the joists consists of multiple-ply 1" boards in the center bay of the barn and single-ply

1″ boards in all other bays. Flush timber beams align with the timber frames above and also span north to south. The joists and flush beams are supported by two dropped beamlines at the interior and by masonry walls along the exterior. The dropped beams consist of multiple-plies of 2″ x 11 1/2″ lumber and are supported by a combination of timber corbels/columns and steel pipes. Some columns are on concrete plinths and others are embedded into the concrete slab.

Condition

The second floor framing is in fair to poor overall condition. About half of the floor boards have evidence of severe beetle damage and require replacement. Beetle damage is abundant in the north span and the among single-ply boards in the middle span. Beetle damage is sparse in the south span. A small quantity of floor boards are missing or broken. About half of flush beams are badly damaged by beetles, including one beam in the southwest corner that has failed completely and is missing. Floor joists were observed to have substantial permanent deflection. Additionally, several floor joists or joist connections were observed to be broken, particularly within the north joist span. The dropped beams and columns are typically in serviceable condition with checks and splits typically limited to a single ply. Columns that are supported by plinths are generally in good condition, while embedded columns have rot at their base. There is noticeable differential settlement at interior column locations, resulting in sloping floors and beams.

Analysis

The beetle-eaten, rotted, and broken wood boards, joists, and beams are unsafe conditions and make the second floor framing unsuitable for any type of occupancy at this time. However, we performed an analysis based on the assumption that these deficiencies are repaired in kind.

Our calculations indicate that the joists have the capacity to support a 60 psf live load, in addition to the dead weight of the framing. Joist reinforcement would be required to meet the Minnesota State Building Code requirements for public assembly occupancy. Note that the observed permanent deflection in a majority of the joists will be easily perceptible and is typically not acceptable for a public assembly occupancy. Complete replacement may be necessary.

Our calculations indicate that the beams supporting the joists have the capacity to support a 30 psf live load, in addition to the dead weight of the framing. An added column in the middle of any longer than 8′-0″ would be required to meet the Minnesota State Building Code requirements for public assembly occupancy.

Second Floor Perimeter Walls

Description

The exterior perimeter walls are timber frames connected with mortise and tenon connections. Beams, columns, and braces vary in size, but a majority of timbers are approximately 6 1/2" x 8". Siding consists of 1" boards oriented vertically with applied battens that cover the joints between the boards.

Condition

The second floor perimeter walls are in good to fair overall condition. As with the roof frames, many of the columns and beams have notches or mortises in odd locations, indicating that these were likely part of the previous barn. Many of the timbers, boards, and battens have become loose as fasteners corrode, loosen, or pull out. The exterior siding, while also exhibiting rotting deterioration at the lower extremities, appears intact and sound. However, if left unattended, the rotting of the timber members will eventually have an adverse effect on the stability and load carrying capacity of the walls. This condition should be treated in the near future. The sill plate along the north wall has also rotted.

First Floor Perimeter Walls

Description

The first floor walls are all masonry walls, but constructed with a variety of materials and are of different ages. The south, east, and 12 feet of the north wall are 12" thick CMU walls built with modern-era block. These walls appear to be the newest of the first floor walls and likely replaced the barn's original walls. The west wall is also a CMU wall, but is constructed differently. The top 8 courses consist of 8" thick x 16" wide blocks. The bottom course and southwest corner are historic 12" thick x 24" wide block. The wide-module blocks may be part of the Big Barn's original walls, while the remainder of the wall likely replaced the original wall when the one-story addition was built. Approximately 60 feet of the north first floor wall is a multiple-material masonry wall. The top four courses are historic 12" thick wide-module CMU and the bottom of the wall is stacked field stone. The unique presence, short height, and incomplete length of the field stone wall suggests that this may be part of a foundation wall that remained after the previous barn was disassembled. The wide-module CMU is likely original to the 1914 barn.

Condition

The first floor walls are in good overall condition and appear to be supporting the framing adequately. The west, south, and east walls have several vertical cracks located below punched window locations. Although these cracks are neither surprising nor structurally concerning, if these areas are not properly sealed, water migration may eventually

threaten the structural system. A wider crack has opened up at the southeast corner, indicating more settlement at this location. This crack should be monitored for further movement as part of a maintenance program and repaired after sufficient data has been taken. The remaining portions of wide-module CMU and stacked field stone walls appear to be well maintained and in very good condition, although some amount of mortar replacement is necessary.

Analysis
Based on our observations, the first floor walls appear to have sufficient capacity to support the gravity and soil loads on the building. However, the observed cracking indicates that the footings (or lack thereof) on which the walls are supported are neither large enough nor deep enough to spread the building's load evenly to the soil and prevent seasonal heaving. The change in occupancy to public assembly may result in further settlement and cracking.

One-story Addition

Description
The roof framing of the one-story addition is enclosed and all framing was hidden from direct observation by sheathing and finish materials. Framing is assumed to be dimensional lumber rafters and ceiling joists spanning in the north to south direction. The roof covering is metal. The gable end wall is sheathed with vertical boards without battens. The walls consist of 8" thick CMU walls that appear to be supported by the edge of the concrete slab-on-grade.

Condition
The roof framing members could not be directly observed. There is evidence of water penetration on the surface of ceiling finish materials, indicating that there was a deficiency in the roof covering at some point during the structure's life. It is possible that the roof rafters and/or ceiling joists have experienced some degree of rotting, particularly where they are in contact with the first floor concrete masonry walls. There is a stair-stepping crack in the west masonry wall, which usually results from differential settlement of the soil below the wall.

Analysis
Access to roof framing was not sufficient to obtain adequate measurements for calculations. However, the performance of the observable structural frame and attached finish material is assumed to reflect the performance of the structural elements to which the finish material is attached. Based on our observations and assuming good maintenance, the structural system appears to have sufficient capacity to support the dead, live, and snow loads during the building's lifetime and will continue to perform in kind.

Concrete Silo

Description

The silo is constructed with 3" thick x 10" wide x 30" tall precast concrete blocks tied together by external tension ties spaced at approximately 30" on center. The roof is made of curved and tapered metal panels assembled to form a dome with an oculus at its middle. The silo structure appears to rest directly on soil. The link building between the barn and the silo is a cast-in-place concrete slab roof supported on CMU walls.

Condition

The concrete is in good overall condition with no evidence of damage or deterioration. Efflorescence staining is occurring on the outer surface of several of the precast units near the top of the silo, but the blocks appear to be structurally sound. The cast-in-place roof of the link building is in good condition, but its supporting masonry walls have vertical and horizontal cracks. These walls are not sufficiently supporting the adjacent soil and require reinforcement or replacement.

Analysis

No analysis was performed for this structure. However, the silo appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

Items or Areas of Concern

Replace split roof rafters

Replace all roof rafters with splits along the bottom edge of the rafter.

Time frame for this work — Prior to any occupancy

Replace severely beetle-damaged wood

Replace all severely beetle-damaged wood. In general, all wood at or below the second floor with beetle exits holes on any of its surfaces should be replaced.

Time frame for this work — Prior to any occupancy

Investigate minor beetle-damaged wood

Evidence of minor beetle damage was observed on the timbers that were salvaged from the previous barn, which are the most significant historical fabric of the Big Barn. If these timbers are to remain, they should be scanned with a non-destructive testing device to determine how much material is lost.

Time frame for this work — Prior to any occupancy

Reinforce timber connections

The connections between members should be designed and reinforced for the wind loads required by the current Minnesota State Building Code if the structure is used for any occupancy other than agricultural operations.

Time frame for this work Prior to any change in occupancy

Reinforce or replace first floor framing

Although some joists and beams still have sufficient structural capacity to support the current loads, the only framing members with sufficient strength to support a public occupancy are the columns. In addition, all columns with rotted based should be removed and replaced.

Time frame for this work Prior to any occupancy

Repair and monitor masonry wall

Repair small vertical and stair-stepping cracks in first floor masonry walls. It is recommended that the larger crack located at the southeast corner be monitored for a year for further movement prior to repairing. Repoint masonry walls with deteriorated mortar.

Time frame for this work Within one year

Inspect one-story addition roof framing

Remove a small portion of finish materials at isolated areas to thoroughly inspect the ends of framing members for rot.

Time frame for this work Within one year

Replace first floor slab on grade

The slab on grade is badly damaged, likely from a combination of overloading and frost heave. When replacing the slab on grade, consideration should be given to properly supporting the perimeter walls to prevent further settlement and/or frost heave.

Time frame for this work Prior to any change in occupancy

Repair, replace, or remove masonry walls between barn and silo

The masonry walls with horizontal cracks do not have sufficient structural capacity to retain the adjacent soil. This wall should be reinforced, replaced, or removed.

Time frame for this work Within one year

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

Exterior Brick Masonry Walls

Periodically inspect and repair, if necessary, brick masonry veneer. Repoint eroded mortar, re-place dislodged or loose brick.

Time frame for this work Every 10 years

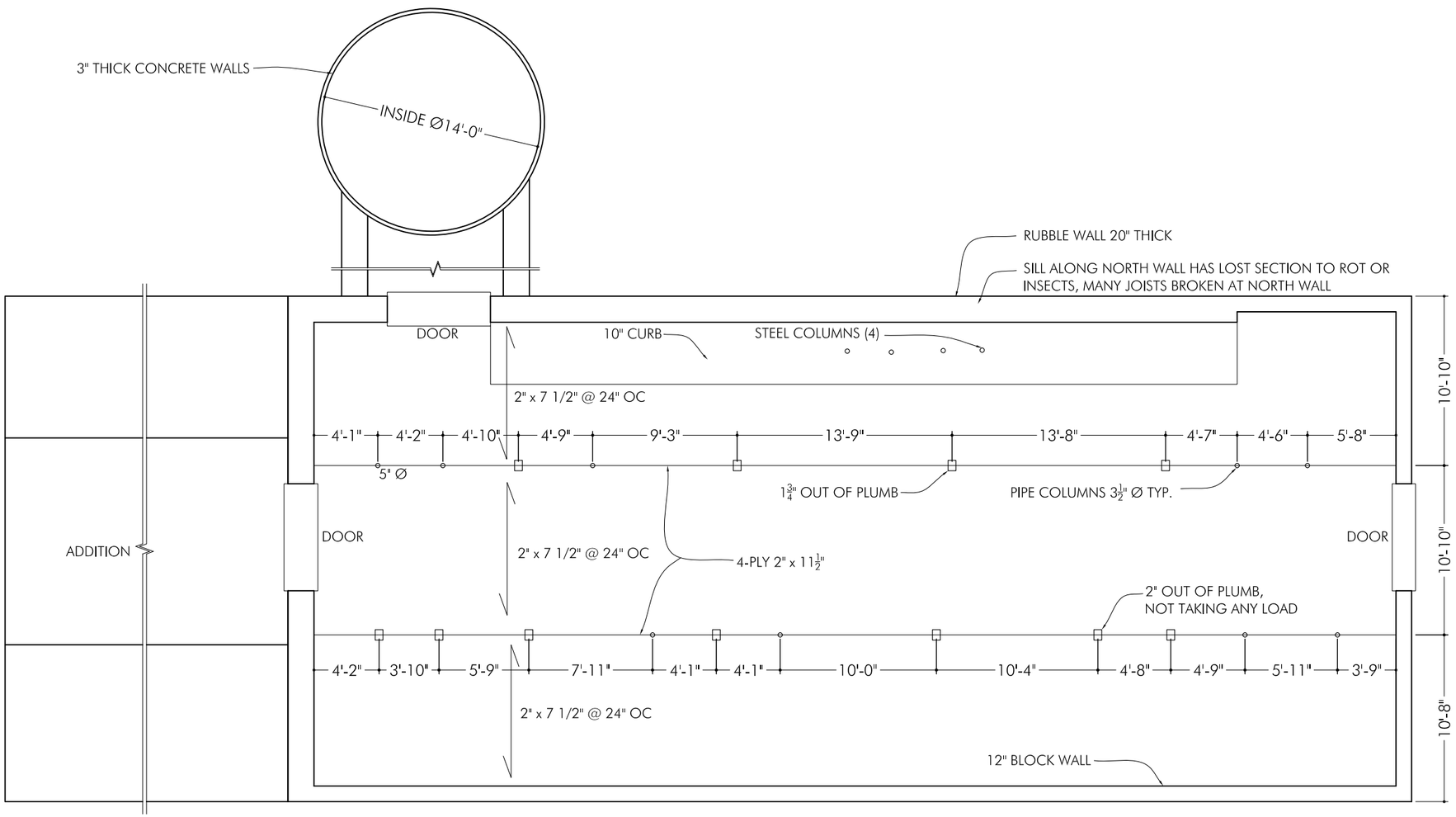
Summary

The Big Barn was observed to be in fair condition overall. The timber frame and a majority of the masonry walls appear to be intact and performing adequately, however, will require more in depth investigation, design, and reinforcement if the structure is used for a public assembly occupancy. The first floor framing and foundation will likely require complete removal and replacement for any future occupancy.

SHEET NOTES

Columns on plinths are generally free of rot. Embedded columns are rotting.

Insect holes identified in many members.



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DRAWN Mattson Macdonald Young

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Andrew Peterson Farmstead HSR
Minnesota State Highway 5 and Parley Lake Road, Waconia, MN 55387

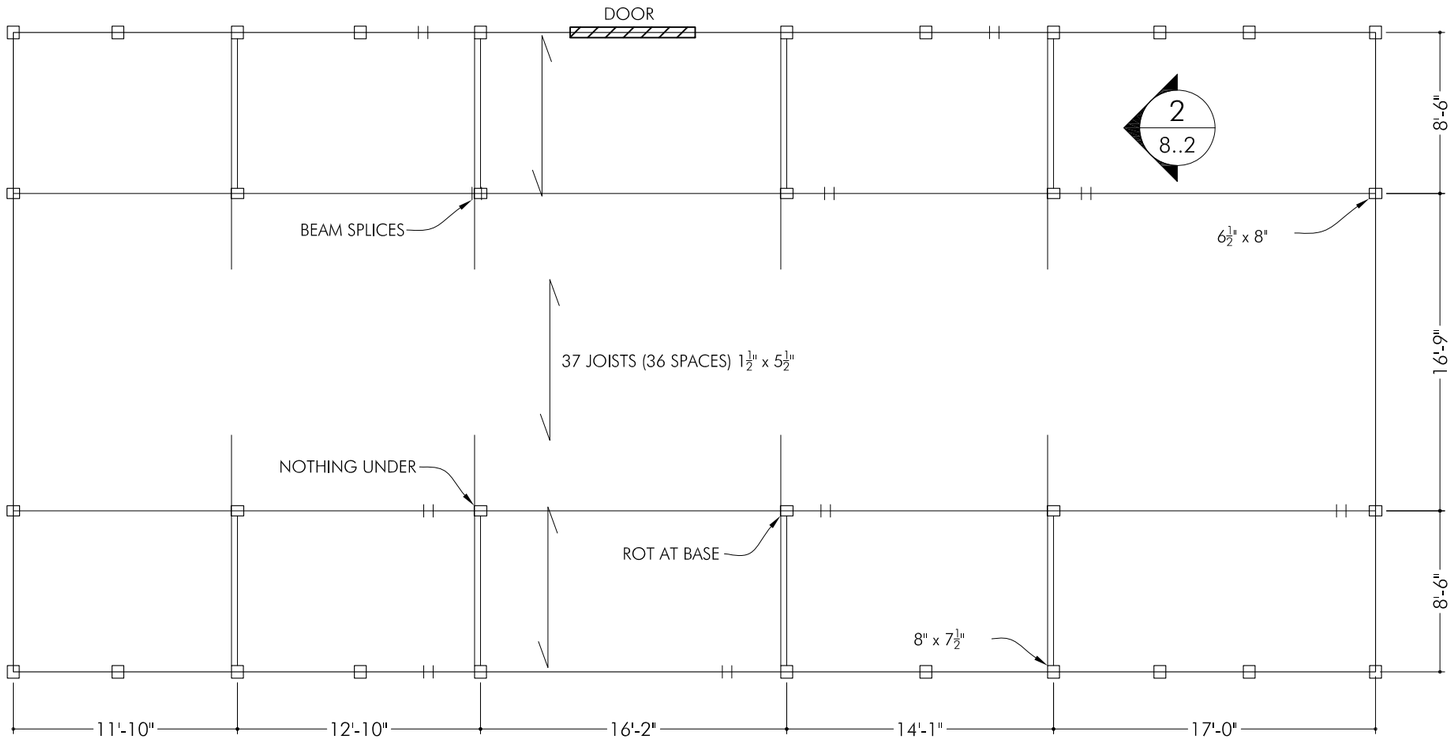
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FIRST FLOOR

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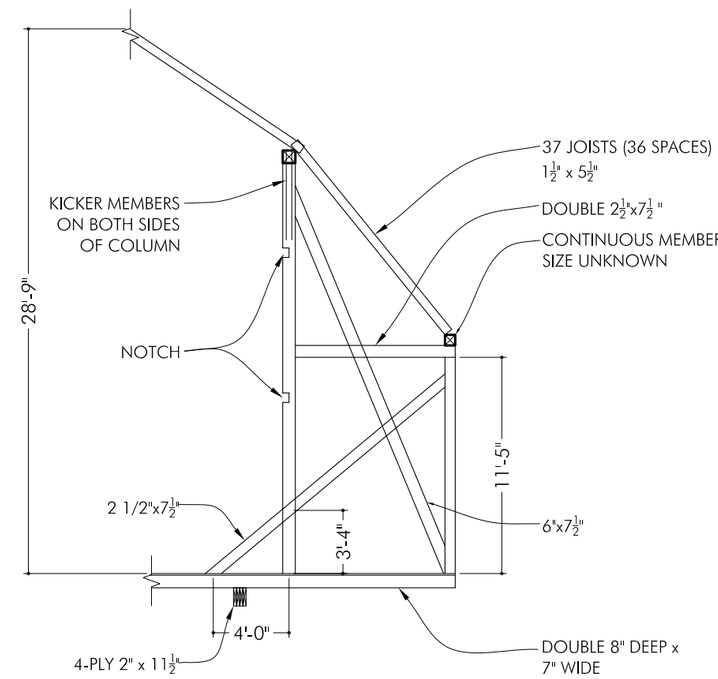
SHEET NOTES

Insect holes identified in many members



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2 | SECOND FLOOR TRUSS (8 TOTAL)

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DATE 07.28.2017

DRAWN Mattson Macdonald Young

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Andrew Peterson Farmstead HSR

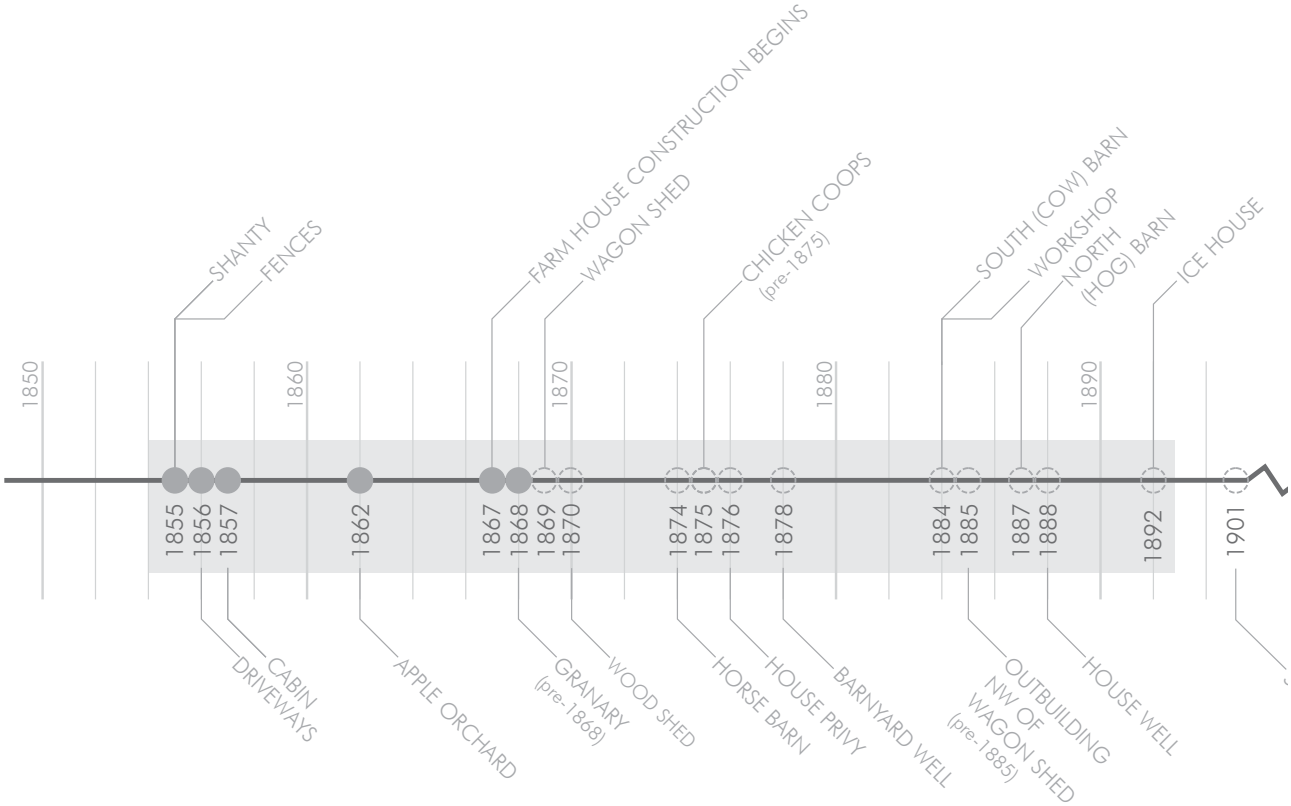
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BIG BARN

SECOND FLOOR

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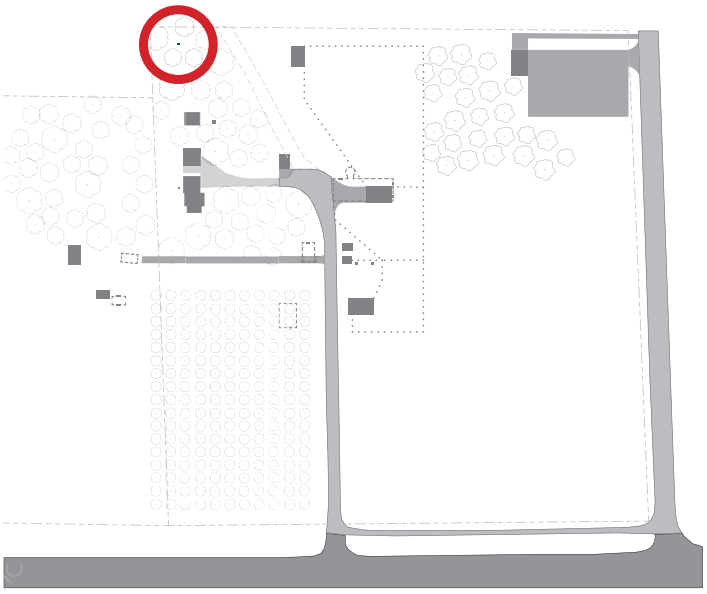



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SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

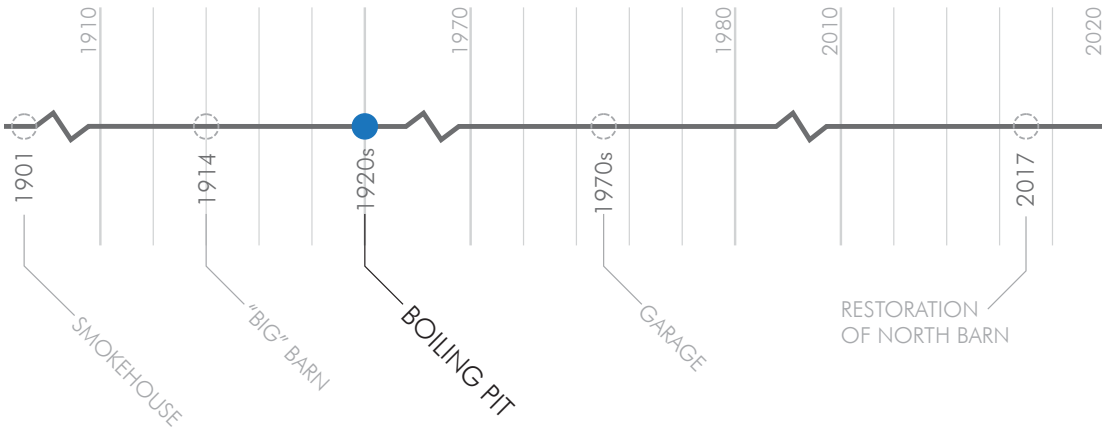
BOILING PIT

"(I) Made mortar for the new syrup pan fireplace."
-April 9, 1877





Site Plan (no scale)



ORIGINAL MAPLE SUGAR & SORGHUM CANE BOILING PIT, 1869
EXISTING BOILING PIT, CIRCA 1920'S

Condition: 1869 pit not existing, 1920's pit partially existing
Contributing to the Historic District: No

Historical Context For The Maple Sugar And Sorghum Cane Boiling Pit

By Rolf Anderson

Native Americans were processing maple sap into syrup and sugar long before the first European explorers arrived, making them among the oldest agricultural commodities in the nation. In Minnesota, processing was done in the central and northern part of the state where native sugar maple trees grow. Maple trees were usually tapped in February and March. The traditional production of maple syrup and sugar involved boring holes into maple trees, placing a tube called a spile into the hole, and allowing the sap to drop into covered pails or buckets hung from the spile.

Maple sap was typically processed in a one-room building known as a sugarhouse. The building contained the firebox, a chimney pipe, a long shallow metal evaporator pan, and various jugs, bottles, and other miscellaneous equipment. Within the well-ventilated building, the sap was boiled over the open fire. It took about 43 gallons of the watery sap to produce one gallon of maple syrup.[114]

Peterson's "boiling pit" was located outside and was not sheltered by a building. His first reference to the boiling pit is dated April 9, 1869, when he "plastered the stove for the syrup kettle." His diary entries indicate that at times there was more than one fireplace in use and they required on-going repairs. The fireplaces were built with stone or brick. On April 4, 1877, he "hauled stone to make the fireplace for the new syrup pan." A later fireplace was built using brick. On December 28, 1882, he noted that "Sture went to Chaska and brought home a load of glazed fire bricks that I want for the fireplace in the syrup camp."
Peterson also processed sorghum into sorghum molasses using a similar

114 Granger, 6.485-6.486.

process to that for making maple syrup. Sorghum molasses was used as a sweetener. On October 14, 1881, he "finished making molasses. We have 100 gallons." On April 4, 1882, he noted, "I am tapping 313 maples this year." On April 18, 1882, he stated, "We have made the last of the syrup for the spring. We have made over 50 gallons."

PHYSICAL DESCRIPTION

Description Based on Andrew Peterson's Diaries and Farmstead Ledgers

Although nothing remains of the original boiling pit, the diary entries mention boiling maple syrup and sorghum almost every year. The maple syrup was processed in the spring, and molasses was made in the fall. The diary entries and ledgers also provide us with some information on the physical appearance of the boiling pits.

It appears that the Peterson's maple syrup and boiling pit operations became more sophisticated and fruitful as they made, and procured, better and more boiling equipment. Parts of the boiling pit appear to have been upgraded and modified between April 9, 1869 and September 24, 1884 (the first and last times the construction or maintenance of the boiling pit is mentioned in the diaries). In addition, routine maintenance and repairs were often made to the syrup pans. The diary records "plastering" around the syrup pans on an almost yearly basis in preparation for the next batches of syrup. This likely included replacing the deteriorated mortar between the bottom of the evaporation pan and the top of the fireplace, where they were joined.

Sometimes more than routine maintenance was required. Even though Andrew Peterson plastered the maple syrup pan into place on April 10, 1875, he had to repair it only 5 days later. The entry from April 15, 1875 reads, "Today I had to tear out the evaporation pan and put a new wooden frame on it as it was leaking." Two years later, on April 4, 1877, Peterson prepared to make a new fireplace, "I hauled stone to make the fireplace for the new syrup pan." This new fireplace was not a replacement, but a place for an additional syrup pan that he bought from Andrew Peterson in Carver on March 31, 1877.

Although not a part of the boiling pit itself, the family had a cane mill that was likely close to the boiling pit. Cane mills are used to press sorghum stalks, an action which creates the syrup that is then boiled to make molasses. In 1879, Andrew Peterson wrote in his diary, "made a

foundation for the cane mill." Mills made the beginning of the molasses process much quicker and easier. With the mill, they were able to make 128 gallons of sorghum molasses that year.

On September 30, 1881, Andrew Peterson wrote in his diary, "Sture went to Waconia and brought home the large stovepipes for the outdoor fireplaces for the molasses pans." The fireplaces themselves were wood-burning and originally built out of stone, and were later replaced with store-bought stoves. The ledger from October 6, 1882 states that 12 pieces of iron were purchased for the oven at the syrup camp. It is recorded in the ledger that on December 19th of that year, Andrew Peterson bought 600 glazed bricks for the "outdoor oven for [an] evaporation pan." A diary entry from December 28th details that he was hauling these bricks from Chaska.

Overall, the evidence from the diary and the ledger entries indicate the last boiling pit Andrew Peterson used was made out of Chaska brick and was uncovered. In addition, we know that there was more than one fireplace, and that purchased ovens and stovepipes were used by the family near the end of the period of significance.

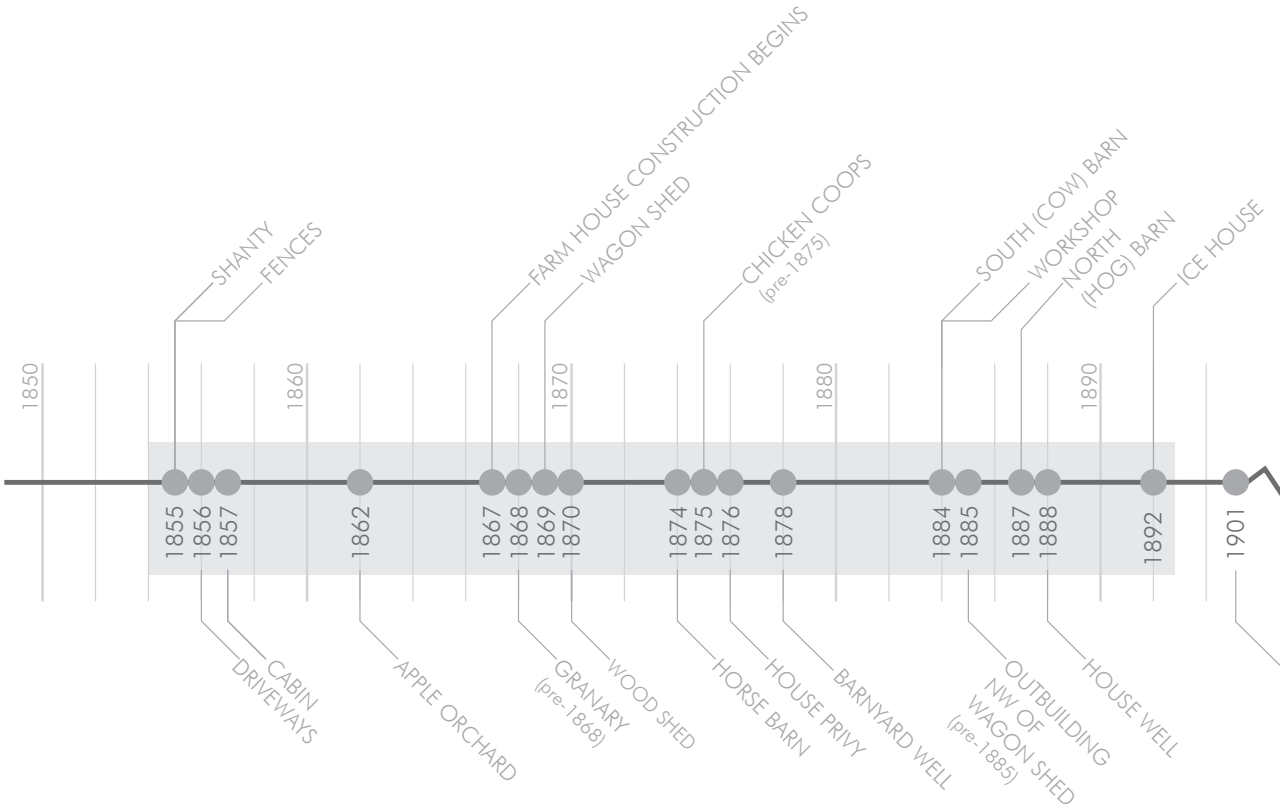
Description Based on Physical Evidence

Although the original boiling pit does not remain, a later boiling pit from after Andrew Peterson's lifetime exists. Remnants of a foundation to a boiling pit structure remain to the north of the house and to the west of the drive to the adjacent property. Some light tan bricks are visible. The bricks were covered with a layer of concrete and a portion is reinforced concrete. Due to the use of reinforced concrete in this pit, we know that it was built sometime around when the house for the tenant farmer was built in the 1920's.

EXISTING CONDITION

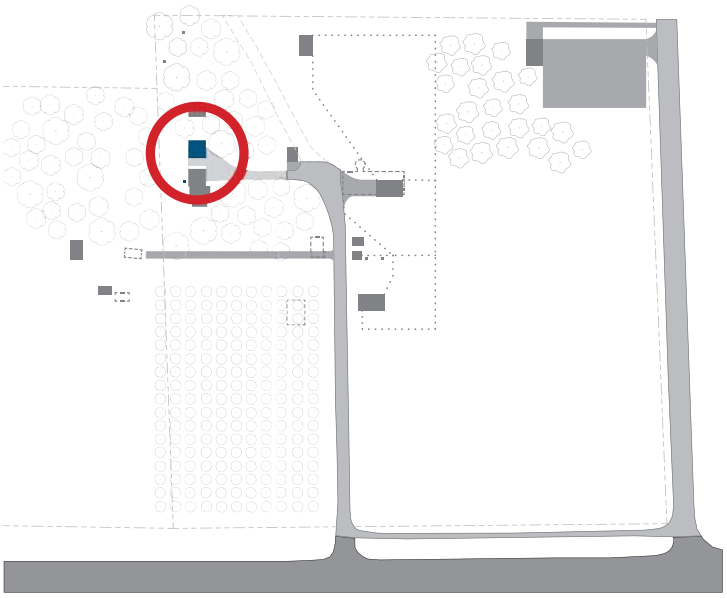
No boiling pit exists from the period of significance, and the existing remnants of a foundation are in poor condition. Since the concrete is broken up into pieces, it is unrecognizable as a boiling pit.




1850
1860
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1892
1901
SHANTY
FENCES
FARM HOUSE CONSTRUCTION BEGINS
WAGON SHED
CHICKEN COOPS
(pre-1875)
SOUTH (COW) BARN
WORKSHOP
NORTH (HOG) BARN
ICE HOUSE
CABIN
DRIVEWAYS
APPLE ORCHARD
GRANARY
(pre-1868)
WOOD SHED
HORSE BARN
HOUSE PRIVY
BARNYARD WELL
OUTBUILDING NW OF WAGON SHED
(pre-1885)
HOUSE WELL

GARAGE





Site Plan (no scale)



Figure 147: Northwest corner of Garage with Farmhouse visible in background.

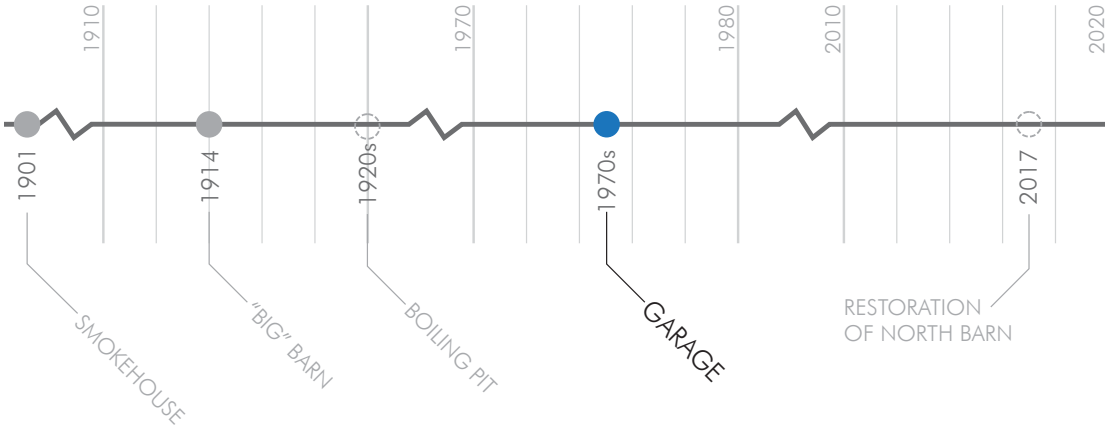




Figure 148: East facade of Garage.



Figure 149: North facade of Garage.



Figure 150: Space between Garage and Farmhouse.

THE GARAGE, 1970'S

Condition: Existing
Proposed treatment: Demolition
Contributing to the Historic District: No

PHYSICAL DESCRIPTION

The Garage is an auxiliary structure to the Farmhouse and was constructed after Andrew Peterson's lifetime on the site of the Wagon Shed.

The south wall of the Garage is located about six feet away from the north wall of the house. It is a rectangular one-story wood-framed structure with a dirt floor. It is primarily clad on the east and south walls with vertical board and batten siding. On the west and north exterior walls, the siding is wood horizontal lap siding. The exterior is painted brown. There is an overhead Garage door on the east façade and a typical hinged door to the east of the south façade. There are two tall single-hung windows on the west facade, and one small single-hung window on the north façade. The structure has a gable roof with asphalt shingles and a ridge running in the north and south direction.

EXISTING CONDITIONS

The Garage is overall in poor condition. According to the structural evaluation, the foundation has failed in two locations, and the walls and roof have settled. The roof load capacity is also below the requirements for the state of Minnesota.

TREATMENT RECOMMENDATIONS

It is recommended that the Garage be demolished for three reasons:

1. The first is that the structural repairs determined necessary through the structural condition assessment are likely to cost more than the structure itself.
2. The second reason is that the Garage did not exist during the lifetime of Andrew

Peterson or his immediate family. If the Garage remains, it could contribute a false sense of history.

3. The third reason is that the Wagon Shed that existed during Andrew Peterson's lifetime stood on part of the footprint of the Garage. In order to reconstruct the Wagon Shed for storage and interpretive purposes, the Garage needs to be demolished.

STRUCTURAL ASSESSMENT

By Mattson Macdonald Young Engineers

Please review complete structural report for conditions and limitations of these structural recommendations.

A Garage of more recent vintage rests to the north of the Farmhouse. It is a wood framed structure with a dirt floor with an overhead door at the east elevation.

Description

The roof is framed with 2x rafters with occasional collar ties. The rafters rest on wood stud bearing walls at the building perimeter. The bearing walls rest on shallow footings near grade level.

Condition

The roof framing is in fair to poor condition. The framing does not meet the current building code requirements for snow load capacity and additional reinforcing of the roof will be required. The foundations have failed at two locations causing the wall and roof to settle. Reconstruction of portions of the walls will be needed as well as the replacement or underpinning of the foundations where failure has occurred. It is likely that the cost of repairs for the Garage structure will exceed the value of the existing building.



151: Interior of Garage.



Figure 152: Condition photograph of sagging roof.



FUTURE PLANNING CONSIDERATIONS

The restoration will provide visitors to the site a chance to see the farmstead as it was during the time that Andrew Peterson lived and worked there. With this in mind, it is vital that the farmstead be accessible to visitors of all physical abilities, and be updated to the extent feasible to current building codes and requirements.

SUSTAINABILITY AND ENERGY CODE COMPLIANCE

For some of the existing structures and proposed structures on the farmstead to function, mechanical, electrical, and plumbing equipment will need to be installed. Whenever modern equipment is added to existing buildings, it is important that the potential impacts of the systems be weighed and decisions be made carefully. The information below is intended to provide guidance to the Carver County Historical Society for future decision-making processes surrounding these additions. Detailed recommendations are provided in the individual building and features section.

Energy Code Compliance

Currently, properties listed in the State or National Register of Historic Places are exempt from provisions of the U.S. Department of Energy's Building Energy Codes Program and the International Energy Conservation Code. Regardless of code requirements, a sustainable site is ideal both environmentally and financially. Efforts should be made to make the site as sustainable as possible. Of course, historically, the site was entirely off the grid as it used no electricity, had no plumbing, and was minimally heated.

The American Society of Heating and Refrigeration Engineers (ASHRAE) is in the process of finalizing a new guide, ASHRAE 34P: Energy Guideline for Historical Buildings. We recommend these guidelines be used to aid in the rehabilitation of the historic buildings modified for new uses. Inserting insulation, waterproofing, and sealing gaps and cracks are common current-day, sustainable practices but can be detrimental to historic structures if improperly applied or detailed. Likewise, selection of new heating, cooling, and ventilation equipment should be done with care. Historic, vernacular buildings were constructed with inherently sustainable features which can easily be overlooked or made inoperable by standard-practice mechanical upgrades.

When it is complete, the ASHRAE 34P guide will offer information that can be used to evaluate the ecological, energy, visual, and material impacts of various systems. It will also provide tools for understanding how the historic use of a building and the way it was constructed lends itself to certain systems and methods of heating and cooling. Topics include planning for increased structural load related to equipment, noise concerns, insulation, glazing options, and restoring historic lighting. For more information, visit www.ashrae.org.

Impacts on Integrity

When introducing modern mechanical, electrical, and plumbing equipment into historic buildings, it is important to consider the impacts that new equipment can have on the building's aesthetic integrity. New systems should be selected with the goal to retain as much of the historic materials as possible, while maintaining the feeling and association of the place.

We recommend that all mechanical, electrical, and plumbing equipment installed on the farmstead be concealed to the extent possible. We recommend that the majority of the modern amenities necessary for operation of the farmstead be housed in new construction buildings located outside of the viewshed of the main farmyard if possible. We recommend that the equipment added to the farmhouse be as minimal as possible.

Operating Impacts

In addition to the topics already discussed, one of the largest concerns for the Carver County Historical Society in making these decisions is the impact on the daily operation and maintenance of the farmstead as a historic site. The monetary costs of the equipment, its installation, maintenance, and energy consumption should be weighed when selecting systems. In many cases, a higher upfront cost and lower maintenance and energy consumption is better for an organization.

ACCESSIBILITY AND FIRE LIFE SAFETY

Many of the modifications necessary for safe egress from a building are similar to, or related to, accessibility. Proper width of corridors and doors to accommodate building occupants and door hardware that are operable simply and easily are just two elements where accessibility and egress overlap. In both of these cases, making modifications to a historic structure to accommodate safer and easier passage may not be feasible. The *Conservation Principles* included in the appendix of this report notes that "conservation is the careful management of change." Change will be required in order to make the Andrew Peterson Farmstead safe and accessible for use for visitors today, but those changes will need to be considered carefully and at a level of detail greater than the scope of this report. Some general considerations are provided in this section.

Code Requirements

Historically designated buildings are not required to be upgraded to current building code (fire code included) unless there are certain triggers, such as a change of use or a hazard to life safety. A thorough evaluation of the life safety and accessibility of each restoration or rehabilitation project is necessary during the preliminary phases of design work. The design and use of the buildings directly impact the code requirements.

Programming uses sympathetic to historic buildings

It may be necessary to place program elements in certain locations specifically to take advantage of an accessible route or adequate egress rather than making significant modifications to a historic structure to accommodate an ill-placed new use. For example, the lower level of the barns are simpler to provide access to and have adequate widths and openings for sufficient egress than the upper level of the Farmhouse making them better suited for spaces that require large groups of people to gather.

Fire Suppression

Fire alarms and fire suppression systems are valuable assets and a means of protecting historic resources. They are also invasive to install and visually obtrusive. The installation of such systems should be made on a case by case basis depending on the significance of the building, opportunities to conceal such systems, and hazards associated with the new use.

Site Accessibility

Accessibility of the site itself is a topic that should be covered in a future Cultural Landscape Report. The report should make recommendations for accessibility of the site on several scales from the pathways and connections to buildings to the materials used for pathways and driveways that are historically appropriate and accessible.

Toilet facilities

Toilet facilities should be available within a reasonable distance from all features and fully accessible, ideally located in a new construction building.

HAZARDOUS MATERIALS

Existing paint in the farmhouse has tested positive for lead, and it is likely lead paint has been applied to other structures. It is important that lead testing be done in all areas that are suspected to contain lead paint. Work done in areas containing lead paint can cause hazardous particles to be released into the air. For this reason, all areas that test positive for lead paint must comply with the EPA's guidelines for lead safety. The EPA's Lead-Based Paint Renovation, Repair and Painting (RRP) Rule requires that all workers be certified and trained in lead-safe practices and EPA-certified.

For further information about safe lead removal processes, please refer to resources on the EPA website and in Appendix E: Lead-Safe Guide.

PEST CONTROL

The barns and the granary have powderpost beetle damage. Powerpost beetles make small holes in wood that damage the strength and structural integrity of timber beams and posts. Wood members that have been determined to be in acceptable condition by the structural report (please see Structural Report and Barn Condtiions Drawings in Appendix) should be treated to ensure that powderpost beetles do not cause more damage.

Ideal Conditions for powderpost beetles

Powderpost beetles can survive in a range of moisture levels between 6 to 30%. However, they thrive between 10-20% moisture levels. They also thrive in wood with at least 3% wood starch. Sapwood is most susceptible to powderpost beetle damage because of its high carbohydrate content.

Extermination

In partial building infestations, the spread of infestations from parts of a structure to another can be prevented by removing wood beams, posts, panels, or other wood portions with the concentrated damage. However, due to the extent of the damage in the buildings on the farmstead, and in order to maintain its historic integrity of material, we recommend that material be retained where possible. Instead of removal, we recommend a full extermination process.

There are several options available to exterminate powderpost beetle infestations. One is extreme cooling or heating of the wood to kill the beetles. This method is not recommended because extremely high and extremely low temperatures must be obtained in order to ensure extermination. This would not be feasible for the size of the structures and could cause other damage. Another option is to fumigate the structures with chemicals. We also do not recommend this option due to the size of the structures. In addition, fumigation does not prevent further infestations, and larvae can reform annually.

The recommended method of extermination is the application of surface products. Surface treatments take longer to fully clear wood of pests, but are most effective long term. For more information on products and methods of extermination, please refer to these resources in the Appendices:

- Bohart Museum of Entomology. "Powder Post Beetles." University of California, Davis. Accessed July 25, 2017. http://www.bohart.ucdavis.edu/pdfs/Note%2046%20Powder%20post%20beetles.pdf

- "LivingWithBugs Guide, Identification, Life Cycles and Management: Powerpost Beetles." Accessed July 25, 2017. http://www.livingwithbugs.com/PDFiles/powder.pdf

Damage Prevention

In order to prevent infestation and damage from powderpost beetles, wood should be kept dry. Varnishes, sealants, paint, or wax can be applied to new wood or wood that is determined pest-free to prevent infestations, although many of these finishes change the appearance of wood which would not be historically appropriate. Testing finishes for an appropriate aesthetic affect as well as function is necessary. It is important to point out that these treatments will not kill infestations that already exist. In addition to applying these treatments to the surface of the wood, existing holes should be filled to prevent beetles from reentering.



CONCLUSION

PHASING AND PRIORITIZING WORK

The Andrew Peterson Farmstead is a large and complicated site, with many individual parts that must come together to achieve a complete site restoration. By planning and phasing, work can progress as budget allows, and each portion can be completed to its full potential. The following is a framework for next steps at the Andrew Peterson Farmstead:

1. The highest priority is the stabilization of the existing, historic structures from the period of significance. Steps to prevent continued deterioration and loss of historic fabric of the South Barn, Granary, and Farmhouse are of critical importance. Depending on the financial resources available, it may be necessary to do immediate, Preservation (as defined by the Secretary of the Interior Standards) work on these structures so as to minimize loss of historic fabric, saving the recommended steps for Restoration or Rehabilitation as budget allows.
2. The 1914 Barn, while not from the period of significance, poses a serious safety risk and liability to CCHS. Making the building safe is a high priority.
3. It is recommended that a Cultural Landscape Report, including a professional, archaeological survey, and an update to the National Register Nomination be completed prior to Restoration or Rehabilitation of the South Barn, Granary, and Farmhouse, making those studies a high priority. Completion of an actionable masterplan is another necessary step at this point in order to direct and focus the Rehabilitation plans for the site.
4. Rehabilitation of the Andrew Peterson Farmstead, including treatment beyond basic safety and stabilization of the structures, requires the information gathered from future studies referenced above. This phase of work includes completing the work to the North Barn, South Barn, Granary, Farmhouse, and other structures as necessary to fulfill the masterplan and CCHS's intended interpretation of the site.

As work progresses on-site, priorities will invariably shift. For example, removal of the reinforced-concrete foundation of 20th-century house may become a high priority item after the CLR is complete in order to allow CCHS to begin restoration of the orchard as soon as possible. The following are general rules of thumb for approaching prioritization of work on-site:

It is recommended that work on the site be prioritized according to the physical condition of each building or feature. Work on portions that are in the worst condition and/or pose the greatest potential for loss of historic material and integrity should be completed first.

After the time-critical work is completed, the work necessary to achieve the goals established by the Carver County Historical Society for the use and interpretation of the site should be addressed. In other words, after all stabilization of buildings and features is complete, work should then be prioritized according to which projects will make the biggest impact for visitors to understand and learn from the site.

An appendix of this report contains preliminary cost estimates which may be used to aid in determining the timeframe and phasing for the work.



APPENDICES



APPENDIX A

COST ESTIMATE

COST ESTIMATE

The recommendations listed in the recommendation sections of this report are included in the cost estimate below. Each of the line items listed in the cost estimate can be referenced back to the section of the report for that particular building. These treatment recommendations are preliminary in nature and will need to be refined by a preservation architect and structural engineer and synthesized into more precise construction documents for a contractor to bid and work from. The cost estimate itself reflects the imprecise nature of the treatment plan in this early stage. The estimate is useful for planning purposes, but we recommend thinking of it as a ballpark estimate. We generally recommend a contingency of 25%-50% for estimates at this stage.

This estimate does not include professional fees for the design of each intervention described in the report. The professional fees for projects similar to these range from 20-35%. Historic preservation projects tend to be slightly higher than typical new construction projects and range quite a bit depending on several things including the level and complexity of intervention required, the bidding process, and the schedule. Because of the unique conditions and stresses that many of the materials have been exposed to on the property, we recommend some additional testing and investigations in this report.

Cultural Landscape Report & Archaeological Study	**$120,000**
National Register of Historic Places update	**$40,000**

Smokehouse Rehabilitation

Masonry restoration
replacement of deteriorated or missing roof fascia boards
replace wood roofing
replace deteriorated wood on the west vent
install mechanism for hanging meat
remove all existing interior paint
paint exterior wood fascia boards

Subtotal	$7,500
Overhead, Profit, and Mobilization (20%)	$1,500
Contingency (20%)	$1,500
Construction Estimate	$10,500
Estimated Professional Fees (20%)	$2,100
Total	**$12,600**

Farmhouse Rehabilitation

Structural repairs
Replace deteriorated trim and paint exterior
Rebuild masonry at kitchen
Repoint kitchen addition
Remove both porches
Reconstruct original porches
Restore chimneys
Replace roofing with wood shakes or shingles
Replace gutters and downspouts
Restore existing windows
Mechanical, Electrical, and Plumbing
Reinforce First Floor to meet code requirements for occupancy
Restore interior finishes on First Floor
Rehabilitation of Second Floor for offices

Subtotal	$504,000
Overhead, Profit, and Mobilization (20%)	$100,800
Contingency (20%)	$100,800
Construction Estimate	$705,600
Estimated Professional Fees (35%)	$246,960
Total	**$952,560**

Granary Exterior Restoration

Relocation to original location on site (not including purchase of land)
Structural repairs and replacement
Replace and paint siding
Replace wood roof shingles
Restore existing south windows and door

Subtotal	$67,000
Overhead, Profit, and Mobilization (20%)	$13,400
Contingency (20%)	$13,400
Construction Estimate	$93,800
Estimated Professional Fees (30%)	$28,140
Total	**$121,940**

1914 Barn Stabilization

Structural repairs and replacement for stabilization
Replace and paint siding and trim
Restore existing windows and doors
Remove silo and addition

Subtotal	$510,000
Overhead, Profit, and Mobilization (20%)	$102,000
Contingency (20%)	$102,000
Construction Estimate	$714,000
Estimated Professional Fees (35%)	$249,900
Total	**$963,900**

South Barn Restoration

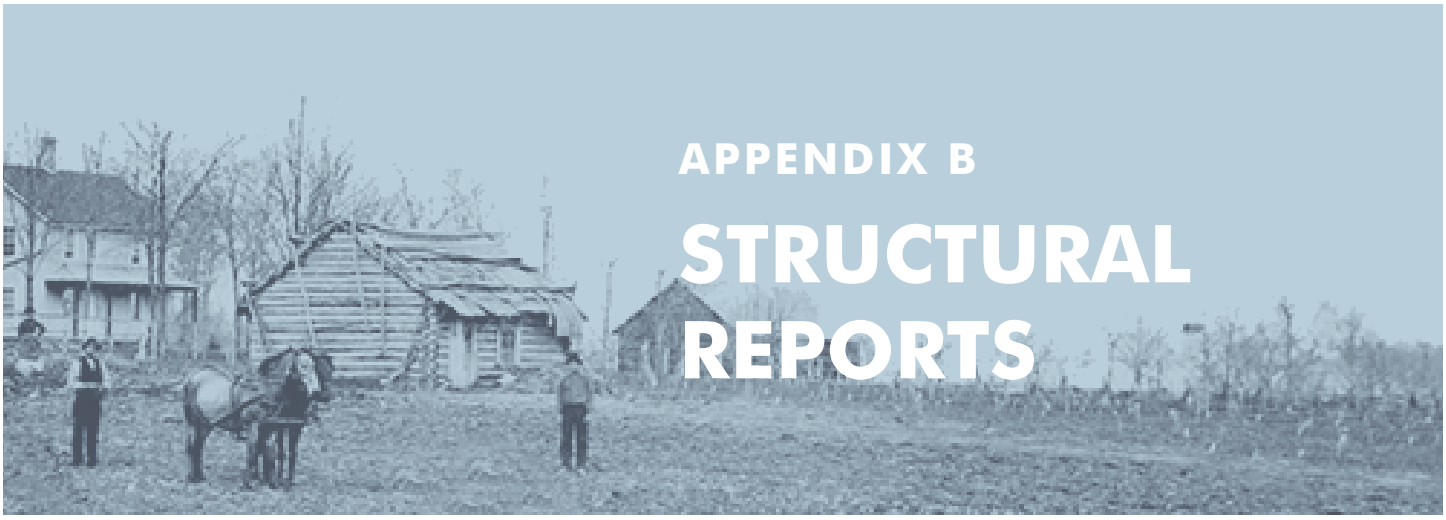
Structural repairs and replacement for stabilization
Replace and paint siding and trim
Restore existing windows and doors

Subtotal	$160,000
Overhead, Profit, and Mobilization (20%)	$32,000
Contingency (20%)	$32,000
Construction Estimate	$224,000
Estimated Professional Fees (30%)	$67,200
Total	**$291,200**

Garage Demolition

demolition

Subtotal	$15,000
Overhead, Profit, and Mobilization (10%)	$1,500
Contingency (5%)	$750
Construction Estimate	$17,250
Estimated Professional Fees	$0
Total	**$17,250**



APPENDIX B

STRUCTURAL REPORTS

Mattson Macdonald Young
structural engineers

Basset Creek Business Center
901 North 3rd Street, #100
Minneapolis, MN 55401

612-827-7825 voice
612-827-0805 fax

July 31, 2017

Angela Wolf Scott
MacDonald and Mack Architects
712 Grain Exchange Building
400 South 4th Street
Minneapolis, MN 55415

Re: Structural Condition Assessment of the Buildings at the Andrew Peterson Farmstead
Laketown Township, Carver County, Minnesota

Dear Angela:

We have had the opportunity to observe the condition of the existing historic buildings at the Andrew Peterson Farmstead near Waconia, Minnesota. We have made a visit to the site to walk through the historic structures in order to form an opinion of the building condition and to identify any areas of damage, deterioration or deficiency. The following is a summary of our observations and opinions:

Purpose and Scope
It is our understanding that the building owner desires to restore the existing buildings and wishes to obtain opinions from qualified professionals concerning the building frame, envelope, structural system, mechanical and electrical systems in order to plan and budget for the continued use of the buildings.

This report concerns only the structural frame and elements that are an integral part of the load resisting system for the buildings. It is our understanding that other qualified professionals have been retained to observe and report on the building history, character, preservation treatment, electrical systems, mechanical systems, fire protection, egress and life safety compliance with the building code.

Our review describes only the structural elements that could be observed directly within that space. Assumptions were made concerning the elements that could not be observed directly based on our understanding of the surrounding structure and our experience with buildings of a similar nature. The performance of the structural systems and framing elements were judged by visual observation only. No destructive testing was performed nor were existing finishes removed to expose structural elements. Measurements were taken when and where we deemed it necessary for analysis of framing elements. The buildings that were reviewed as a part of this assessment are as follows:

The Farmhouse
The North Barn
The South Barn
The Big Barn
The Granary
The Smokehouse

The Farm House has been occupied in the past as a single-family residence. It is our understanding that this building will be occupied in a similar manner in the future. Portions of the farm house may be used as a meeting place.

The North Barn has been used as an accessory agricultural structure in the past. It is our understanding that this building may be occupied in the future as retail or exhibit space.

The South Barn has been used as an accessory agricultural structure in the past. It is our understanding that this building may be occupied in the future as retail or exhibit space.

The Big Barn has been used as an accessory agricultural structure in the past. It is our understanding that this building may be occupied in the future as retail or a space of public assembly such as an event center.

The Granary has been used as an accessory agricultural structure in the past. It is our understanding that this building may be occupied in the future as storage or exhibit space.

The Smokehouse has been used as an accessory agricultural structure in the past. It is our understanding that this building will not be occupied and will remain a site artifact. It may be used in the future for smokehouse demonstrations.

Qualifications of the Personnel
David Macdonald P.E. is the author of this report, the lead investigator and the Structural Engineer of Record (SER). David has over 40 years of experience in the field of structural engineering and has performed condition reviews of numerous buildings and structures similar to the subject buildings.
David has lead the observation, analysis and assessment of the Farm House, North Barn and the Smokehouse. Adam Neigebauer, P.E. has aided in the observation work, analysis and assessment of the South Barn and Granary. Eric McElrath, EIT has aided in the observation work, analysis and assessment of the Big Barn. Two other staff members have also participated in the observations and data accumulation for the project.

Methods of Investigation
The method of investigation was by casual observation and was limited to those structural elements that were exposed to view. However, at the Farmhouse, much of the structural system was covered by finish material. To a limited extent, finish or sheathing materials covered portions of the framing at the accessory buildings. In these situations, the performance of the finish material was assumed to reflect the performance of the structural elements to which the finish material was attached. No attempt was made to perform an exhaustive investigation of all structural elements. No finish material was removed or damaged to expose the underlying structural elements.
Measurements of the building and various building elements were taken during the observation only to aid in our research and investigation when we deemed this to be necessary. Dimensions noted in the report or on sketches should be considered approximate and not used without field verification.

No existing as built documents were available for our use. Nor were we made aware of any previous reports related to the structural condition of the buildings or investigation of building elements. This office was involved in the recent restoration work for the North Barn and the current condition of that building was compared to the previous assessment.

Structural Analysis
Sample structural calculations were performed for the typical roof and floor framing systems where those framing members could be confirmed by observation and measurement. Analysis was not performed for each specific load supporting element, but rather, the member size and spacing that was considered the most common condition. The intent of the analysis is to provide a guide for the anticipated safe load capacity of the roof or floor area. The likely live load capacity was determined in combination with the dead weight of the structure and attached finishes. The required live load capacity for typical occupancy is shown below in accordance with the Minnesota State Building Code.

Residential	40 psf
Office	50 psf
Retail	100 psf
Public Assembly (large gatherings)	100 psf

Building Assessment – Farmhouse

Farmhouse

The Farmhouse is a timber and masonry framed structure with a 2-story wing at the south, called the main house, and a one-story wing to the north called the north addition. There is a basement below both wings. The main house has a one-story porch at the south, the north addition has a one-story porch at the east. Each porch has a crawl space below the porch floor.

Two Story Main House

The main house appears to be the original farmhouse structure. There is a one story enclosed porch at the south side of the building. The porch appears to have been modified from the original; the roof configuration has been changed and the original open porch has been enclosed. The main house has a basement below the building footprint, the porch has a crawl space below the first floor.

Roof Framing

Description

The roof is a gable configuration with the ridge extending east to west. The roof is framed with rough-hewn rafters, approximately 4 ½" diameter spaced approximately 25" to 26" on center. The roof sheathing is rough cut 1x planking. The rafters form an approximate 9:12 pitch roof and meet at the ridge. There is no ridge beam or ridge board. The roof covering is metal.

Condition

The roof framing appears to be in good to very good condition. There is only slight evidence of water leakage around the chimney penetration at the center of the roof. The remainder of the roof rafters and deck boards appear sound, solid and performing properly.

Analysis

Calculations indicate that the roof framing will be adequate to support the dead and snow loads required by the Minnesota State Building Code.

Attic Floor

Description

The attic floor, which forms the ceiling of the second floor, consists of 5 ½" x 7 ¼" timbers spaced approximately 30" on center. The floor of the attic space is sheathed with rough sawn planks. The dimension from the attic floor to the roof ridge is approximately 86". The gable endwalls at the attic are framed with wood studs sheathed with rough sawn planks.

Condition

The attic floor framing was covered by sheathing and ceiling plaster in nearly all observable areas. However there did not appear to be any substantial deflection, disruption or unusual conditions observed that would be considered evidence of a deficiency. The attic floor and gable end walls did not exhibit any evidence of water penetration or damage. The attic floor is judged to be in good condition and performing adequately.

Analysis

Calculations indicate that the attic floor will have the capacity to support a live load, in addition to the dead weight of the floor system, of 20 psf. The floor currently is not accessible and is not used for any type of occupancy.

Second Floor

Description

The second-floor framing could only be observed at one location, but it appears that the second floor is framed with 7" (+/-) deep purlins and are assumed to be similar to the first-floor purlins which were found to be 7" deep by 9" wide. Spacing of the second-floor purlins could not be confirmed with any certainty, but the nailing pattern on the floor likely coincides with the purlin location. The measured spacing of the nail lines was found to be 26" to 30" on center. The purlins span north to south resting on the perimeter walls and interior partition walls.

Condition

The second-floor framing was covered by sheathing and ceiling plaster in nearly all observable areas. However there did not appear to be any substantial deflection, disruption or unusual conditions observed that would be considered evidence of a deficiency. The floor did not exhibit any evidence of water penetration or damage. The second floor is judged to be in good condition and performing adequately.

Analysis

The second-floor framing has the capacity to support a 40 psf live load, in addition to the dead weight of the framing and finishes. This is based on the assumed member size and spacing. A 40 psf live load capacity meets the building code requirements for residential use. Use as office space or public occupancy would require reinforcement or enhancement of the structure.

First Floor

Description

The first-floor framing could be observed within the basement level where no finished ceiling existed. The floor purlins were 7" deep x 9" wide rough-hewn timbers. Floor sheathing over the purlins consisted of 1" x 5 ½" boards. The purlins vary in spacing from 26" to 30" on center and span north to south, bearing on the sill over the foundation walls and on a beam line located approximately mid-span of the purlins. The beam consists of a 7" deep x 10" wide rough-hewn timber supported by four timber columns. The timber columns supporting the beam were approximately 8" x 8" in size and rest on stone plinths over the basement floor. It is assumed that a stone or concrete footing existed below the columns but could not be confirmed.

Condition

The floor framing appears to be in good condition with little evidence of damaged or deteriorated members. The beam supporting the purlins exhibits somewhat excessive deflection between supporting columns but appears in good condition. The columns supporting the center beam are observed to be in good condition. One timber column exhibits a large vertical crack, but this is judged to be a natural defect, common in wood members and does not threaten its ability to support the necessary loads.

Analysis

The first-floor purlins can support a live load, in addition to the dead weight of the framing and floor finish, of 100 psf. This live load capacity will meet the building code requirements for occupancy as public assembly.

The timber beam supporting the purlins in the center of the basement has a calculated live load capacity of 40 psf in its current configuration. This capacity would meet the building code requirements for residential occupancy. If the first-floor space is to be occupied as office space or public assembly one additional support column will be required in the basement to divide the larger 11 ft. span into two shorter spans.

Above Grade Perimeter Walls

Description

The exterior perimeter walls of the main house appear to be "log framed" solid stacked timbers. The log framed walls are assumed to extend from the top of the masonry foundation walls to the ceiling of the second floor. The interior partition walls are stud framed walls with lath and plaster or more recently applied sheetrock. The interior walls are assumed to be non-bearing walls although the wall separating the northwest bedroom and the bath is likely acting to transfer attic and second floor loads to the floor framing below. The log framed perimeter walls support the roof and second floor framing.

Condition

All of the perimeter walls are covered with plaster finish at the interior face and vertical tongue and groove siding at the exterior face. None of the wall framing could be directly observed however, small openings in the exterior siding allowed occasional probing of the timber members. Probing was performed at the base of the wall, occasionally approximately 24" above the base of the wall and immediately below the first-floor window sills. Soft timber, likely rotted as a result of water penetration was found at the following locations:

- At the base of the wall at the northeast building corner. This extended approximately 16" to 20" above the foundation level.
- At the base of the wall in the vicinity of the southeast corner where the wall meets the south porch. This damage appeared to be limited to the lower 12" of the wall.
- At the base of the wall at the southwest corner of the building. This damage appeared to be limited to the lower 8" to 12".

At this time, the effects of any deterioration in the log framed walls has not presented itself in the attached finishes. The interior plaster and sheetrock finishes are intact and do not exhibit crushing, bowing or cracking. The exterior siding, while also exhibiting modest rotting deterioration at the lower extremities, appears intact and sound. However, if left unattended, the rotting of the timber members will eventually have an adverse effect on the stability and load carrying capacity of the walls. This condition should be treated in the near future.

Foundation Walls

Description

The foundation walls for the main house are constructed with rubble limestone. The walls are of a thickness and configuration that would imply that the basement level may have been dug out from a previous crawl space under the first floor after the building and the perimeter shallow footings were already in place. The basement floor appears to be constructed with brick pavers covered with a concrete topping.

Condition

The foundation walls are judged to be in good to very good condition and appear to be supporting the framing above adequately. There is one location at the east wall where stone has been removed and dislodged, likely for installation or repair of a utility line entering the building from the exterior. This location should be repaired. The remainder of the foundation walls appear solid, intact and stable. There is no evidence of settlement, differential settlement, bowing or excessive cracking.

Porch Framing

Description

The floor and roof framing for the porch at the south side of the main house is hidden from direct observation by sheathing and finish materials. The roof is assumed to be constructed with dimension lumber rafters and ceiling joists. The porch floor framing can be observed to a limited degree through a small vent opening into the crawl space. The floor joists are 2x dimension lumber spanning east to west and are supported by several shallow timber beams that are resting on stone plinths. It is likely that the stone plinths rest directly on the soil and do not have footings placed below them. The floor of the porch consists of board sheathing. The crawl space below the porch is quite shallow, with the soil approximately 6" to 10" below the bottom of the floor framing.

Condition

The porch framing members could not be directly observed, except for a small visible area into the crawl space below the floor. However, the framing appears to be solid, sound and there is no evidence of damage, deterioration or a serious deficiency. Based on past experience with similar structures, it is possible that some minor deterioration has occurred in the roof sheathing and in the roof framing, particularly where that framing meets the main building walls. The floor framing over the shallow crawl space may also have experienced some minor deterioration, particularly any wood framing on concrete or in contact with the soil. While there is no evidence that these conditions occurred to a degree that threatens the porch framing, the wood members should be inspected more closely when there is an opportunity to remove parts of the ceiling, roof and floor sheathing.

Analysis
No analysis was performed on the roof or floor framing for this structure. However, the framing appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

One Story North Addition

The one story north addition appears to have been added after construction of the main house. The porch at the east side of the addition also appears to have been a later addition. There is a basement space below the north addition. The porch at the east elevation has a crawl space below the porch floor.

Roof Framing

Description
The roof of the north wing is constructed with rough cut 2x6 rafters and 1x board sheathing. This roof is a gable configuration with the ridge extending north to south. It appears that the east facing slope of the roof was modified and raised slightly to accommodate the east porch addition. The masonry gable end walls at the north elevation were extended upward and brick masonry was added to accommodate the revised pitch of the east slope.

Condition
The roof framing could be observed to a limited extent through an access opening in the north gable end. The roof framing and roof sheathing appears to be in good to very good condition. There is no evidence of a serious water penetration through the roof and no evidence of a deficiency or damage to the roof framing members.

Analysis
Calculations indicate that the roof framing will be adequate to support the dead and snow loads required by the Minnesota State Building Code.

First Floor

Description
The first-floor framing could be observed within the basement level where no finished ceiling existed. The floor joists were 2x8 dimension lumber spaced 19” on center. The joists span approximately 13 ft. from west to east and bear on the stone foundation walls.

Condition
The floor framing appeared to be in good condition with little evidence of damaged or deteriorated members. The joists appeared solid and sound. The deflection of the joists is somewhat excessive but not a concern.

Analysis
The first-floor joists can support a live load, in addition to the dead weight of the framing and floor finish, of 30 psf. This live load capacity does not meet the building code requirements for occupancy for a residential use.

The addition of a new supporting member at approximately the midspan of the joists increases the live load capacity considerably. The addition of a new beam line down the center of the basement area will allow a live load capacity exceeding 100 psf. This live load capacity would allow use of the space for nearly all types of occupancy including public assembly.

Above Grade Perimeter Walls

Description
The exterior walls of the north wing at the west and north elevations consist of brick masonry veneer over wood stud framed walls. The wall between the kitchen and porch is covered with finish materials, but is assumed to be a continuation of the brick veneer/wood stud construction. The north and east walls of the porch appear to be dimension lumber framed.

Condition
The brick masonry veneer is generally in good condition. There are isolated areas of mortar erosion, dislodged and damaged brick. The conditions of damage occur at the base of the wall, near grade level and at the building corners. Repair of the damaged and deteriorated brick veneer should be undertaken within the next two years. General review and repointing of exterior brick masonry should be undertaken approximately every 10 years.

The lumber framed walls of the porch addition could not be directly observed. There was no visible evidence of damage, deterioration, bowing or displacement that might indicate a deficiency.

Foundation Walls

Description

The foundation walls for basement area below the north addition are constructed with rubble limestone. The basement floor is a poured concrete slab on grade.

Condition

The foundation walls are judged to be in good to very good condition and appear to be supporting the framing above adequately. The foundation walls appear solid, intact and stable. There is no evidence of settlement, differential settlement, bowing or excessive cracking.

Porch Framing

Description

The porch at the east elevation is enclosed and all framing was hidden from direct observation by sheathing and finish materials. The roof is assumed to be a continuation of the north addition roof rafters. The porch floor is assumed to be constructed with dimension lumber joists similar to the interior floor framing. The floor of the porch is overlain with plywood sheathing. There is a crawl space below the porch with the soil likely only 6” to 8” below the bottom of the floor framing. Due to the stiffness and solid feel of the floor it is likely that intermediate support elements exist located between the exterior wall of the porch and the east wall of the kitchen.

Condition

The porch framing members could not be directly observed, however, the framing appears to be solid, sound and there is no evidence of damage, deterioration or a serious deficiency. Based on past experience with similar structures, it is possible that the floor framing over the shallow crawl space may have experienced some minor deterioration, particularly any wood framing on concrete or in contact with the soil. While there is no evidence that these conditions occurred to a degree that threatens the porch framing, the wood members should be inspected more closely when there is an opportunity to remove parts of the floor sheathing.

Analysis

No analysis was performed on the roof or floor framing for this structure. However, the framing appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

Garage Structure

A garage of more recent vintage rests to the north of the Farmhouse. It is a wood framed structure with a dirt floor with an overhead door at the east elevation.

Description

The roof is framed with 2x rafters with occasional collar ties. The rafters rest on wood stud bearing walls at the building perimeter. The bearing walls rest on shallow footings near grade level.

Condition

The roof framing is in fair to poor condition. The framing does not meet the current building code requirements for snow load capacity and additional reinforcing of the roof will be required. The foundations have failed at two locations causing the wall and roof to settle. Reconstruction of portions of the walls will be needed as well as the replacement or underpinning of the foundations where failure has occurred. It is likely that the cost of repairs for the Garage structure will exceed the value of the existing building.

Items or Areas of Concern.

Roof of the Two-Story Main House

Inspect and repair, if necessary, flashing and waterproofing around the masonry chimney that penetrates the roof deck.

Time frame for this work Within one year.

Basement of the Main House

Provide one new timber support post under the existing beam in the basement area. Provide a new 6x6 timber post midway between existing posts at the east span of the beam and set over a 10" deep by 18" x 18" concrete footing. Provide a precast concrete plinth over the footing to keep the timber at least 8" above floor level.

Time frame for this work Prior to any use of the first floor for other than residential occupancy.

Exterior Walls of the Main House

Remove the existing skirt board at the base of the wall to expose the lower portions of the log framed walls at all wall areas. Inspect the condition and extent of any discovered deterioration. Cut out severely damaged members and replace with new timber. Treat moderately damaged members with consolidant and filler.

Time frame for this work Within one year.

Foundation Walls of the Main House

Repair dislodged and damaged stone at the east foundation wall where a utility line penetrates the wall.

Time frame for this work Within one year.

Roof and floor framing for the South Porch

Remove interior or exterior finishes and sheathing to allow inspection and repair, if necessary, of roof and floor framing. During repair work, inspect and repair if necessary, foundation walls supporting the porch framing.

Time frame for this work When the opportunity first presents itself to undertake this work but within at least 5 years.

Basement of the North Addition

Provide a new 3-2x8 lumber beam under the existing floor joists at approximately mid span of the existing joists. Support the beam at each end on the existing north and south foundation walls. Provide 2 additional 6x6 posts, equally spaced along the span of the new beam. Provide new 10" deep x 16" x 16" footings below each post. Provide a precast concrete plinth over the footing to keep the timber posts at least 8" above floor level.

Time frame for this work Prior to the use of the first floor for any permanent occupancy.

Exterior Brick Walls of the North Addition

Repoint eroded mortar and replace damaged, missing or dislodged brick units at the west and north walls.

Time frame for this work Within 1 year.

Roof and floor framing for the East Porch

Remove interior or exterior finishes and sheathing to allow inspection and repair, if necessary, of roof and floor framing. During repair work, inspect and repair if necessary, foundation walls supporting the porch framing.

Time frame for this work When the opportunity first presents itself to undertake this work but within at least 5 years.

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work — Every 5 years.

Foundation Walls

Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work — Every 10 years.

Exterior Brick Masonry Walls

Periodically inspect and repair, if necessary, brick masonry veneer. Repoint eroded mortar, re-place dislodged or loose brick.

Time frame for this work — Every 10 years.

Summary

In general, the Farmhouse was found to be in good to very good condition. The original framing appears to be intact in most of the spaces and appears to be performing adequately. Isolated areas of damage or deterioration were noted and recommendations for repairs and a suggested time frame for addressing these issues is provided. The structure has performed well in the past and with attention to the specific concerns noted above and with continued proper maintenance the structure should continue to perform adequately well into the future. The Garage structure will require considerable reinforcement and reconstruction. The cost of repairs may well exceed the value of the structure.



East elevation of the Main House.



East elevation of the North Addition



South and west elevation of the Main House. The brick veneer wall of the west elevation of the North Addition is seen in the background.



The attic area of the Main House



The basement area of the Main House.



The foundation wall behind the water tank is damaged and will need repair



Example of the first floor framing. A 9” wide by 7” deep purlin rests on the 10” wide by 7” deep beam.



The basement area of the North Addition



An example of the log wall framing deterioration discovered at the northeast corner of the Main House



An example of the brick deterioration observed at the west wall of the North Addition.



The garage to the north of the Farmhouse.

Building Assessment – North Barn

North Barn
The North Barn, sometimes referred to as the Hog Barn, is a two story timber framed structure with a cellar level. The grade elevation varies for this structure, in the very typical fashion for barn structures, in that the grade elevation matches the first floor level at the west wall and slopes downward so that grade elevation matches the cellar floor at the east elevation. The North Barn is rectangular in shape, approximately 30' in the north to south direction and 20' in the east to west.
The foundation walls are rubble stone masonry, which support the timber framing of the first floor, loft level and roof framing. There is one beam line within the building supported on timber columns. The beamline is offset approximately 2' from the building centerline.
Extensive restoration work for this structure has recently been completed. The restoration was performed as a result of severe windstorms that caused considerable damage to the building.

Description
The building foundation walls consist of 20" to 24" thick rubble stone masonry. The first floor and loft levels consist of heavy timber purlins supported by the exterior walls and one interior beam line. The typical purlin and beam dimension is 8" x 8". There are three 8" x 8" timber columns, approximately equally spaced within the building interior that support the first floor and loft level beams. The columns rest on stone plinths which may actually be the visible top portion of stone footings.
The roof framing consists of timber rafters approximately 4" x 6" in dimension which support board sheathing. The rafters meet at the ridge of the gable roof and are supported also by a post and beam frame that springs from the timber framing below.
The exterior walls consist of timber verticals, horizontal girts and diagonal braces. The exterior board and batten siding is attached directly to the timber wall framing.

Condition
The condition of the North Barn is considered good to very good. This opinion is primarily the result of restoration and repair work recently completed. Damaged and deteriorated purlins and beams have been restored or replaced. The damaged walls have been repaired and connections reinforced with mechanical fasteners and steel hardware.
Approximately one half of the roof rafters have been replaced with new timber that match the original dimensions and configuration.
The foundation walls have been re-pointed and dislocated and missing stone members have been re-placed or re-built.

Analysis
No analysis was performed for this specific report, but we know that the restoration work recently performed included complete calculations to verify the load capacity of the floor and loft level. These floors are capable of supporting a live load of 60 psf. The roof is capable of supporting the snow load required by the Minnesota State Building Code. Reinforcing and enhancement of the perimeter wall frames and braces will allow this framing to resist the reasonable maximum wind load in accordance with the ASCE Standard "Minimum Design Loads for Buildings and Other Structures".

Items of Concern
There are no specific items of concern for the North Barn.

Maintenance Considerations

Exterior Stone Masonry Foundation Walls

Periodically inspect and repair, if necessary, stone masonry walls. Repoint eroded mortar, re-place dislodged or loose stone units.

Time frame for this work Every 10 years.

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

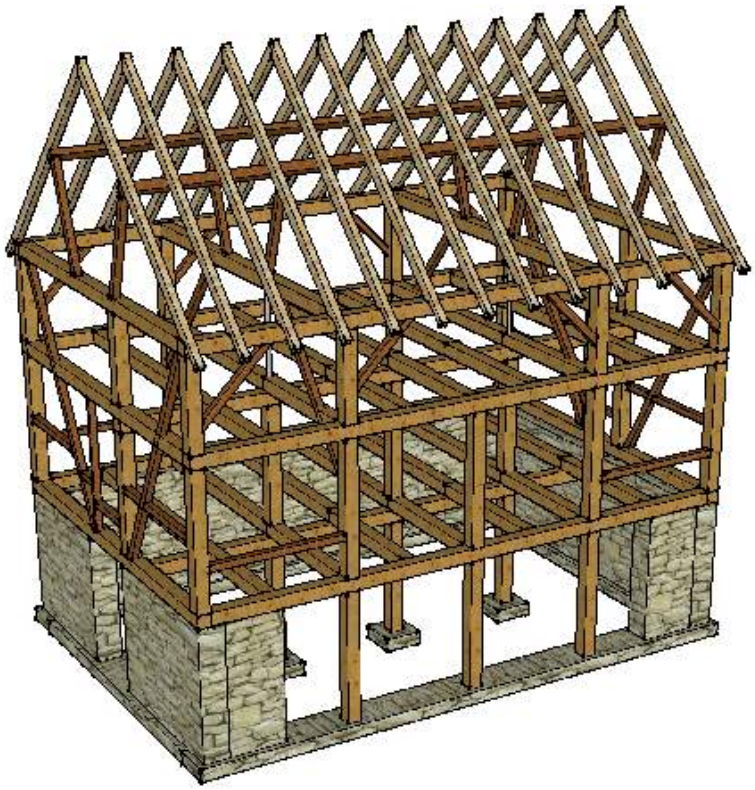
Time frame for this work Every 5 years.

Summary

In general, the North Barn was found to be in good to very good condition. The original framing has been replaced or restored during recent repair work. When maintained properly by adhering to a good periodic maintenance program, the building should perform well for the foreseeable future.



A photo of the barn after severe wind damage. Fall 2010



Isometric view of the North Barn timber framing. View from the Southeast corner



View of the repaired North Barn

Building Assessment – South Barn

South Barn
The South Barn is a two story timber framed structure with a cellar level. The grade elevation varies for this structure, like so many similar barn structures, in that the grade elevation matches the first floor level at the north wall and slopes downward so that grade elevation matches the cellar floor at the south elevation. The South Barn is rectangular in shape, approximately 38' in the east to west direction and 24' in the north to south direction.
The foundation walls are rubble stone masonry, which support the timber framing of the first floor, second level and roof framing. There is one beam line within the building supported on timber columns offset approximately 2' from the building centerline.

The South Barn is currently unoccupied, but was previously used for farming operations, likely livestock housing and feed storage. It is our understanding that the owner is interested in occupying the structure as a public assembly space in the future.

Exterior Siding
Description
The wood siding consists of painted 1" (nominal) thickness x 12" (nominal) boards oriented vertically with applied battens that cover the joints between the boards. The boards and battens are typically attached to the frame of the structure with cut nails.
Condition
The overall condition of the exterior siding is in good to fair condition with isolated areas in poor condition. The areas in poor condition were typically adjacent to the grade or the foundation wall (depending on the area) and consisted of rot, soft wood, and loss of material. In some areas, the battens were observed to be very loose or missing altogether.
Analysis
The siding is in serviceable condition. Loose boards and battens should be re-nailed as necessary. Missing and rotted boards and battens should be replaced. Paint should be applied when repairs have been completed.

Roof System
Description
The roof is a 12/12 pitched, gabled roof with the ridge running in the east-west direction. Its outer layer consists of an exposed fastener sheet steel roofing installed over at least one layer of existing shingles (wood shingles were observed through the gaps in the roof sheathing boards). The roof sheathing consists of nominal 1" boards of varying widths, but typically between 10" and 12", with a gap between boards of approx. 2". The roof rafters are 2x6 (1-7/8"X5-3/4" actual) spaced at about 30" o.c. at the outer bays and at about 36" o.c. at the middle bay. The rafters are supported near their ends at the top of the exterior walls, at their approximate mid-span by the framed purlins and are propped up against the adjacent rafters at the ridge.
Condition
The overall condition of the roof system is good. The roof plane appears to dip and roll at a few locations, but it is not clear if that is a directly related to the roof system, or if it is the result of settlement of other parts of the structure. The rafter tails at the eaves and a small portion of the roof sheathing boards at the gables are exposed. No major deterioration was observed.
Analysis
The roof appears to be performing adequately.

Foundation Walls
Description
The fieldstone foundation walls were exposed at the exterior above grade at the east, west and south sides of the building. The complete interior face of the stone was exposed at the cellar. The fieldstones are the main component of the foundation and are gently rounded and measure between 4" and 12" in diameter. The exterior stones appear to have been cleaved for a flat surface at the

exposed exterior surface. Mortar occupies the space between the stones and serves as a binder. The depth of the foundation walls below grade and the makeup of the footings are unknown.

Condition

The overall condition of the foundation walls is fair. Portions of the wall between openings at the south elevation appear to have displaced laterally at the top, pitching outward. Repairs appear to have been made to the foundation though out its life, indicating that cracking and/or mortar deterioration has taken place in the past.

Analysis

The foundation appears to be performing adequately. Mortar deterioration and cracking should be repointed. The pitching foundation wall should be adequately fastened to the floor structure at the top and monitored for further movement.

East-West Timber Frames

Description

Two geometrically similar east-west oriented frames serve as gravity and lateral elements for the structure and comprise the north and south walls. The north frame differ slightly to allow for upper and lower access doors.

The frames consist of hewn hardwood timbers connected to one another typically with pinned mortise and tenon joints and a few lapped and pinned joints.

The frames consist of 7 full height vertical timbers bearing on a timber sill. Two rows of horizontal girts are positioned in between the vertical timbers. A top timber spans all of the verticals and is the bearing point for the rafters. The north south frames tie into the verticals at various locations. Diagonal braces are installed at 4 locations at the top section.

Condition

The east-west timber frames were in fair to good condition. A few loose/displaced mortise and tenon joints were observed. Insect damage was noted at isolated locations.

Analysis

Most of the wood structural members were in serviceable condition. Timbers that have been affected by insects should be repaired or replaced as needed. Additional structural supplementation and reinforcing work may be required to meet the minimum building code requirements for adequate wind and gravity load resistance. Reinforcement of timber members and joint enhancement will likely be required.

North-South Timber Frames

Description

Four north-south oriented frames serve as gravity and lateral elements for the structure. The outer frames comprise east and west wall of the structure. All four frames are similar, however the outer frames have additional horizontal girts and a different brace layout.

The frames typically consist of hewn hardwood timbers connected to one another typically with pinned mortise and tenon joints and a few lapped and pinned joints.

The frames consist of 3 main vertical timbers bearing on a timber sill. Two rows of horizontal girts at the outer frames and one row of horizontal girts at the inner frames are positioned in between the vertical timbers. Diagonal braces extend from top beam to sill beam at the outer frames. Diagonal braces extend from the top beam to the vertical posts at the inner frames. The braces are lapped and pinned at locations where they cross the horizontal girts at every instance. Angled posts are connected to top beam of the frames that support east-west oriented roof purlins that support the rafters mid-span. The east-west frames tie into the north and south verticals at various locations.

Condition

The north-south timber frames were in fair to good condition. Most of the wood structural members were in serviceable condition. A few loose/displaced mortise and tenon joints were observed. Insect damage was observed at the angled posts that support the roof purlins.

Analysis
Most of the wood structural members were in serviceable condition. Loose joints should be tightened or reinforced. Additional structural supplementation and reinforcing work may be required to meet the minimum building code requirements for adequate wind and gravity load resistance. Reinforcement of timber members and joint enhancement will likely be required.

First Floor
Description
The first floor consists of 3 plies of 1" full thickness sawn boards constructed over supporting beams. The floor boards run the length of the structure (east-west). The supporting beams are 7"x8" timbers at about 4' on center. The beams are supported by an 8X8 timber oriented east-west near the center of the structure. The timber is supported at two locations by columns to an unknown footing condition.
Condition
The first floor condition varies from poor to fair. Some flooring areas were observed to be fairly stout and substantial and isolated areas appeared to be affected by water penetration or insect damage. In one area in the southwest corner of the barn, the lowest ply was missing altogether, exposing the middle ply. Most of the exposed beams supporting the floor are insect damaged. The center beam has sagged to a great extent.
Analysis
The floor is currently not suitable for any type of occupancy. Additional structural supplementation and reinforcing work may be required to meet the minimum building code requirements for adequate gravity load resistance.

Second Floor
Description
The second floor consists of 1 ply of 1" full thickness sawn boards installed over the supporting beams. The boards run the length of the structure (east-west).
Condition
The second floor condition was fair to good. The floor was "bouncy" due to the span length of the floor boards, but the boards did not appear to be deteriorated.
Analysis
The second floor appears to be newer than the other parts of the structure and was likely added for extra light storage. Additional structural supplementation and reinforcing work may be required to meet the minimum building code requirements for adequate gravity load resistance. Alternatively, the floor boards could be removed.

Items or Areas of Concern

Replace rotted wood
Replace all wood damaged by rot. Select areas of the timber sill below the main door should be replaced.
Time frame for this work Prior to any occupancy

Replace severely insect-damaged wood
Replace all severely insect-damaged wood. In general, all wood timbers at the first floor with beetle exits holes on any of its surfaces should be replaced.
Time frame for this work Prior to any occupancy

Investigate minor insect-damaged wood
Determine the extent of damage to the wood members by scanning with a non-destructive testing device. Replace members as necessary.
Time frame for this work Prior to any occupancy

Reinforce timber connections

The connections between members should be evaluated for the wind and gravity loads required by the current Minnesota State Building Code and reinforced as necessary if the structure is used for any occupancy other than agricultural operations.

Time frame for this work Prior to any change in occupancy

Correct and/or stabilize main beam line deflection

Investigate the cause of the main beam line deflection. Correct deflection by jacking (if deemed appropriate). Provide new, correctly sized, frost footings at the interior beamline if existing footings are deemed inadequate. Provide new wood posts to replace existing rotted and missing wood posts.

Time frame for this work Prior to any occupancy

Repair and monitor stone masonry wall

Repair deteriorated mortar at the stone foundation walls, typically at the interior. Repoint with appropriate mortar. Monitor the deflection of the south stone walls. Evidence of past movement was observed – verify that movement is not on-going.

Time frame for this work Within one year

Repair or remove second floor

Provide structural supplementation and reinforcing of the second floor framing. Alternatively, the floor boards could simply be removed (they are minimally attached).

Time frame for this work Prior to any occupancy

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

Exposed Exterior Wood

Periodically inspect and repair, if necessary, the siding, trim, windows and doors. Remove loose paint and repaint as necessary.

Time frame for this work Every 10 years

Summary

The South Barn was observed to be in fair condition overall. The timber frame and a majority of the masonry walls appear to be intact and performing adequately, however, will require more in depth investigation, design, and reinforcement if the structure is used for a public assembly occupancy. The first floor framing will likely require extensive repair and replacement for any future occupancy.



South Barn
North Elevation



South Barn
South Elevation



South Barn
View of the interior second floor area



South Barn
View of the interior first floor area



South Barn
View of the interior cellar floor area



South Barn
Example of typical timber joint



South Barn
Example of the timber member deflection at the second floor



South Barn
Example of the foundation wall condition and the temporary shoring for the first floor beam with an excessive span



South Barn
Example of insect damage observed

Building Assessment – Big Barn

Big Barn

The Big Barn, as described within this report, consists of a two-story barn structure, a one-story addition, and a concrete silo. All structures appear to be supported by the edge of first story concrete slab-on-grade. Soil grade is located near the base of the structure along the south and east walls. At the northeast corner, grade rapidly rises to the top of the first story at the center of the north wall and gradually returns to the base of the first level around the northwest corner.

It is our understanding that the two-story barn was constructed in 1914 in the same location as a previous barn. Many of the previous barn's materials were salvaged and reused during construction of the current barn, including a portion of the first floor north wall and a majority of the timbers that make up the current barn's roof frames. The one-story addition and concrete silo were constructed at a later time.

The term "original" is utilized within this portion of the report to describe the Big Barn and its materials at the time of its 1914 construction. The term "previous" is utilized to describe the barn that the Big Barn replaced in 1914.

The Big Barn is currently unoccupied, but was previously used for farming operations. It is our understanding that the owner is interested in occupying the structure as a public assembly space in the future.

Two-story Barn

Roof Framing

Description

The roof of the two-story barn is a gambrel configuration with the ridge extending east to west. The two pitches of the gambrel roof are 8/12 (peak) and 14/12 (eaves). The roof is framed with 2" x 7 1/2" rafters spanning north to south and spaced approximately at 24" on center. A single ridge board runs along the apex of the gambrel. Rafters are supported by timber beamlines at the north and south walls and at the roof's two slope transitions. There are four total beamlines in the east to west direction. Beams and columns vary in size, but a majority of timbers are approximately 6 1/2" x 8". Each beam-to-column connection has a pair of kickers in the east to west direction, which do not appear to be original to the structure, and a timber frame in the north to south direction. Each frame oriented in the north to south direction appears to have been reinforced with a horizontal and a diagonal brace that were also not original to the barn. The roof sheathing consists of two perpendicular layers of 1x planking. The roof covering is metal.

Condition

The roof appears to be in good overall condition. A small quantity of rafters were observed to have splits that are large enough to affect load-bearing capacity and should be replaced. Many of the columns and beams have notches and mortises at odd locations, indicating that these timbers were likely repurposed from the previous barn. Although the notches decrease the timbers' structural capacity, the timbers appear to be adequately supporting the current load. Evidence of insect damage was observed on surfaces of a majority of the beams and columns, with severity ranging from minor above head-height to severe near the floor. Minor damaged timbers should be scanned with a non-destructive testing device to determine how much material was lost, whereas severely damaged timbers require replacement. Additionally, many of the columns and diagonal braces have partially rotted at their bases and will need to be reinforced or replaced. The connections between beams, columns, and braces appear to be supporting the current load, but have loosened over time and should be reinforced with a more reliable connection. The edges of the roof were observed to bulge outward along the north and south eaves. This movement is common for roofs without ridge beams, collar ties, or ceilings and may have been the motive for reinforcing the frames in the north to south direction.

Analysis
The split rafters, severely beetle-eaten timbers, and rotted timbers are unsafe conditions and make the roof framing unsuitable for any type of occupancy at this time. However, we performed an analysis based on the assumption that these deficiencies are repaired in kind. Our calculations indicate that the roof framing would be adequate to support the dead, snow, and wind loads required by the Minnesota State Building Code.

Second Floor
Description
The second floor framing was observed from below where there is no finished ceiling. The floor is framed with 2" x 7 1/2" floor joists spanning north to south and spaced at varying dimensions that average approximately 24" on center. Floor sheathing over the joists consists of multiple-ply 1" boards in the center bay of the barn and single-ply 1" boards in all other bays. Flush timber beams align with the timber frames above and also span north to south. The joists and flush beams are supported by two dropped beamlines at the interior and by masonry walls along the exterior. The dropped beams consist of multiple-plies of 2" x 11 1/2" lumber and are supported by a combination of timber corbels/columns and steel pipes. Some columns are on concrete plinths and others are embedded into the concrete slab.
Condition
The second floor framing is in fair to poor overall condition. About half of the floor boards have evidence of severe beetle damage and require replacement. Beetle damage is abundant in the north span and the among single-ply boards in the middle span. Beetle damage is sparse in the south span. A small quantity of floor boards are missing or broken. About half of flush beams are badly damaged by beetles, including one beam in the southwest corner that has failed completely and is missing. Floor joists were observed to have substantial permanent deflection. Additionally, several floor joists or joist connections were observed to be broken, particularly within the north joist span. The dropped beams and columns are typically in serviceable condition with checks and splits typically limited to a single ply. Columns that are supported by plinths are generally in good condition, while embedded columns have rot at their base. There is noticeable differential settlement at interior column locations, resulting in sloping floors and beams.
Analysis
The beetle-eaten, rotted, and broken wood boards, joists, and beams are unsafe conditions and make the second floor framing unsuitable for any type of occupancy at this time. However, we performed an analysis based on the assumption that these deficiencies are repaired in kind.
Our calculations indicate that the joists have the capacity to support a 60 psf live load, in addition to the dead weight of the framing. Joist reinforcement would be required to meet the Minnesota State Building Code requirements for public assembly occupancy. Note that the observed permanent deflection in a majority of the joists will be easily perceptible and is typically not acceptable for a public assembly occupancy. Complete replacement may be necessary.
Our calculations indicate that the beams supporting the joists have the capacity to support a 30 psf live load, in addition to the dead weight of the framing. An added column in the middle of any span longer than 8'-0" would be required to meet the Minnesota State Building Code requirements for public assembly occupancy.

Second Floor Perimeter Walls
Description
The exterior perimeter walls are timber frames connected with mortise and tenon connections. Beams, columns, and braces vary in size, but a majority of timbers are approximately 6 1/2" x 8". Siding consists of 1" boards oriented vertically with applied battens that cover the joints between the boards.
Condition
The second floor perimeter walls are in good to fair overall condition. As with the roof frames, many of the columns and beams have notches or mortises in odd locations, indicating that these were likely part of the previous barn. Many of the timbers, boards, and battens have become loose as fasteners corrode, loosen, or pull out. The exterior siding, while also exhibiting rotting deterioration at

the lower extremities, appears intact and sound. However, if left unattended, the rotting of the timber members will eventually have an adverse effect on the stability and load carrying capacity of the walls. This condition should be treated in the near future. The sill plate along the north wall has also rotted.

First Floor Perimeter Walls

Description

The first floor walls are all masonry walls, but constructed with a variety of materials and are of different ages. The south, east, and 12 feet of the north wall are 12" thick CMU walls built with modern-era block. These walls appear to be the newest of the first floor walls and likely replaced the barn's original walls. The west wall is also a CMU wall, but is constructed differently. The top 8 courses consist of 8" thick x 16" wide blocks. The bottom course and southwest corner are historic 12" thick x 24" wide block. The wide-module blocks may be part of the Big Barn's original walls, while the remainder of the wall likely replaced the original wall when the one-story addition was built. Approximately 60 feet of the north first floor wall is a multiple-material masonry wall. The top four courses are historic 12" thick wide-module CMU and the bottom of the wall is stacked field stone. The unique presence, short height, and incomplete length of the field stone wall suggests that this may be part of a foundation wall that remained after the previous barn was disassembled. The wide-module CMU is likely original to the 1917 barn.

Condition

The first floor walls are in good overall condition and appear to be supporting the framing adequately. The west, south, and east walls have several vertical cracks located below punched window locations. Although these cracks are neither surprising nor structurally concerning, if these areas are not properly sealed, water migration may eventually threaten the structural system. A wider crack has opened up at the southeast corner, indicating more settlement at this location. This crack should be monitored for further movement as part of a maintenance program and repaired after sufficient data has been taken. The remaining portions of wide-module CMU and stacked field stone walls appear to be well maintained and in very good condition, although some amount of mortar replacement is necessary.

Analysis

Based on our observations, the first floor walls appear to have sufficient capacity to support the gravity and soil loads on the building. However, the observed cracking indicates that the footings (or lack thereof) on which the walls are supported are neither large enough nor deep enough to spread the building's load evenly to the soil and prevent seasonal heaving. The change in occupancy to public assembly may result in further settlement and cracking.

One-story Addition

Description

The roof framing of the one-story addition is enclosed and all framing was hidden from direct observation by sheathing and finish materials. Framing is assumed to be dimensional lumber rafters and ceiling joists spanning in the north to south direction. The roof covering is metal. The gable end wall is sheathed with vertical boards without battens. The walls consist of 8" thick CMU walls that appear to be supported by the edge of the concrete slab-on-grade.

Condition

The roof framing members could not be directly observed. There is evidence of water penetration on the surface of ceiling finish materials, indicating that there was a deficiency in the roof covering at some point during the structure's life. It is possible that the roof rafters and/or ceiling joists have experienced some degree of rotting, particularly where they are in contact with the first floor concrete masonry walls. There is a stair-stepping crack in the west masonry wall, which usually results from differential settlement of the soil below the wall.

Analysis
Access to roof framing was not sufficient to obtain adequate measurements for calculations. However, the performance of the observable structural frame and attached finish material is assumed to reflect the performance of the structural elements to which the finish material is attached. Based on our observations and assuming good maintenance, the structural system appears to have sufficient capacity to support the dead, live, and snow loads during the building's lifetime and will continue to perform in kind.

Concrete Silo

Description
The silo is constructed with 3" thick x 10" wide x 30" tall precast concrete blocks tied together by external tension ties spaced at approximately 30" on center. The roof is made of curved and tapered metal panels assembled to form a dome with an oculus at its middle. The silo structure appears to rest directly on soil. The link building between the barn and the silo is a cast-in-place concrete slab roof supported on CMU walls.

Condition
The concrete is in good overall condition with no evidence of damage or deterioration. Efflorescence staining is occurring on the outer surface of several of the precast units near the top of the silo, but the blocks appear to be structurally sound. The cast-in-place roof of the link building is in good condition, but its supporting masonry walls have vertical and horizontal cracks. These walls are not sufficiently supporting the adjacent soil and require reinforcement or replacement.

Analysis
No analysis was performed for this structure. However, the silo appears to have performed well in the past to support the snow loads and floor live loads and if maintained in good condition should continue to do so in the future.

Items or Areas of Concern

Replace split roof rafters
Replace all roof rafters with splits along the bottom edge of the rafter.
Time frame for this work Prior to any occupancy

Replace severely beetle-damaged wood
Replace all severely beetle-damaged wood. In general, all wood at or below the second floor with beetle exits holes on any of its surfaces should be replaced.
Time frame for this work Prior to any occupancy

Investigate minor beetle-damaged wood
Evidence of minor beetle damage was observed on the timbers that were salvaged from the previous barn, which are the most significant historical fabric of the Big Barn. If these timbers are to remain, they should be scanned with a non-destructive testing device to determine how much material is lost.
Time frame for this work Prior to any occupancy

Reinforce timber connections
The connections between members should be designed and reinforced for the wind loads required by the current Minnesota State Building Code if the structure is used for any occupancy other than agricultural operations.
Time frame for this work Prior to any change in occupancy

Reinforce or replace first floor framing
Although some joists and beams still have sufficient structural capacity to support the current loads, the only framing members with sufficient strength to support a public occupancy are the columns. In addition, all columns with rotted bases should be removed and replaced.
Time frame for this work Prior to any occupancy

Repair and monitor masonry wall

Repair small vertical and stair-stepping cracks in first floor masonry walls. We recommend that the larger crack located at the southeast corner be monitored for a year for further movement prior to repairing. Repoint masonry walls with deteriorated mortar.

Time frame for this work Within one year

Inspect one-story addition roof framing

Remove a small portion of finish materials at isolated areas to thoroughly inspect the ends of framing members for rot.

Time frame for this work Within one year

Replace first floor slab on grade

The slab on grade is badly damaged, likely from a combination of overloading and frost heave. When replacing the slab on grade, consideration should be given to properly supporting the perimeter walls to prevent further settlement and/or frost heave.

Time frame for this work Prior to any change in occupancy

Repair, replace, or remove masonry walls between barn and silo

The masonry walls with horizontal cracks do not have sufficient structural capacity to retain the adjacent soil. This wall should be reinforced, replaced, or removed.

Time frame for this work Within one year

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, masonry foundation walls. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

Exposed Exterior Wood

Periodically inspect and repair, if necessary, the siding, trim, windows and doors. Remove loose paint and repaint as necessary.

Time frame for this work Every 10 years

Summary

The Big Barn was observed to be in fair condition overall. The timber frame and a majority of the masonry walls appear to be intact and performing adequately, however, will require more in depth investigation, design, and reinforcement if the structure is used for a public assembly occupancy. The first floor framing and foundation will likely require complete removal and replacement for any future occupancy.



Exterior of building from the west, showing the two-story barn with one-story addition in the foreground, and concrete silo on left.



Cracks in first floor masonry walls below window openings and deteriorated wall boards.



Large crack in first floor masonry wall.



Bowing of north edge of roof.



First floor masonry wall with stair-stepping crack and deteriorated mortar.



Horizontal crack in masonry wall between barn and silo. Wall to be reinforced, replaced, or removed.



Along north first floor masonry wall, made of wide-module CMU at the top and stacked field stone on bottom.



First floor column with rotted base.



First floor flush beam with severe beetle damage.



First floor board with severe beetle damage.



Broken and substantially deflected first floor joists.



First floor joists with severely rotted ends.



Timber frame in north to south direction.



Timber frame in east to west direction.



Timber salvaged from previous barn, with evidence of beetle damage.



Rotted base of timber column with screwdriver inserted into soft material.



Split roof rafter.

Building Assessment – Granary

Granary
The Granary, consists of a one and one-half story structure, consisting of a stacked timber section at the north, and a timber framed section at the south.

All structures appear to be supported on loose rock piers. Grade is slightly sloped at the site and is typically about 6”-12” below the first floor framing.

The term “stacked timber” is utilized within this portion of the report to describe the assumed original stacked timber section, and the term “timber framed” is used to describe the timber framed section that is assumed to be constructed later.

The granary is currently unoccupied, but was previously used for farming operations, mainly storage and handling of grain and feed. It is our understanding that the owner is interested in allowing access to the structure as an exhibit space or storage in the future.

Exterior Siding
Description
The wood siding consists of painted 1” (nominal) thickness x 12” (nominal) boards oriented vertically with applied battens that cover the joints between the boards. The boards and battens are typically attached to the structure with cut nails.
Condition
The overall condition of the exterior siding is in good to fair condition with isolated areas in poor condition. The areas in poor condition were typically adjacent to the grade and consisted of rot, soft wood, and loss of material. In some areas, the battens and the boards were observed to be very loose or missing altogether.
Analysis
The siding is in serviceable condition. Loose boards and battens should be re-nailed as necessary. Missing and rotted boards and battens should be replaced. Paint should be applied when repairs have been completed.

Roof System
Description
The roof is a pitched, gabled roof with the ridge running in the north-south direction. The roof consists of sawn wood shingles nailed to the roof sheathing. The roof sheathing consists of nominal 1” boards of varying widths. The roof rafters at the stacked timber portion of the structure consist of wood poles at approximately 24” on center, hewn flat on the side that mates with the roof sheathing. The roof rafters at the timber framed portion of the structure are sawn lumber, approximately 2”x4” in dimension, and about 24” on center.
Condition
The overall condition of the roof system is good. Work performed in the last few decades appears to have focused on the roof. Many of the hewn pole rafters are new and a few of the sawn rafters are new. Most, if not all, of the roof sheathing boards are new. The wood shingles appear to have been replaced when the other related roof work was performed.
Analysis
The roof appears to be performing adequately.

Foundation
Description
The foundation of both structures is loose rock piers. The depth and makeup of supporting elements below what is visible is unknown.
Condition
The rock piers do not appear to be attached to any underlying structure, thus, making them susceptible to heaving and shifting.

Analysis
Additional structural supplementation work (additional piers, etc.) may be required during repairs to meet code requirements for occupancy. It is likely that the existing piers do not extend to frost depth.

Stacked Timber Construction
Description
The north portion of the structure is constructed of stacked timbers, overlapped at the corners with a joint. The exact type of log joint is unknown, as it is not visible. The timbers are hewn relatively flat on four faces. The timbers are hewn to about 5” in width and varying heights between 6” and 16”. The space between the logs and other voids are chinked with what appears to be mortar.
Condition
The portion of the building constructed using stacked logs is in fair to poor condition. One area extending from the bottom to the top at the southwest corner was observed to be in exceptionally poor condition. It appears that the area was exposed to moisture for a considerable amount of time, as rot permeates the entire assembly. It is likely that a past roof leak would have led to this level of deterioration. Other areas were fairly sound with isolated areas of rot and worm damage.
Analysis
The stacked timbers that have been affected by worms and rot should be replaced as needed.

Timber Frame Construction
Description
The south portion of the structure is constructed timber frames consisting of hewn hardwood timbers connected to one another with pinned mortise and tenon joints and a few lapped and pinned joints. Vertical timbers bear on a timber sill. The vertical timbers are attached to a top timber on which the rafters bear. Horizontal girts are let into and are positioned between the vertical timbers at the loft floor level and halfway between the timber sill and the girt at the loft floor line. Diagonal braces extending from the south corner posts to the east top timber and the north-south top timbers serve as the lateral system for the framed structure.
Condition
The timber framed portion of the building is in fair to poor condition. Areas with substantial rot and worm damage were observed.
Analysis
The timbers that have been affected by worms and rot should be replaced as needed. Additional structural supplementation work may be required during repairs to meet code requirements for occupancy

First Floor Framing Construction
Description
The first floor framing in the timber framed portions consists of north-south oriented hewn beams at about 30” on center, let into the north and south sill beams and bearing intermittently on the rock piers. 1” boards nailed to the beams make up the floor. The first floor framing in the stacked log portion consists of north-south oriented beams. 1” boards, with the length running east-west, nailed to the beams make up the floor. This area was largely concealed by the floor, so the exact construction in unknown.
Condition
The first floor framing in the entire structure is in poor condition. A large portion of the floor boards were rotted or missing. The floor beams were observed to be rotted as well, with large section loss resulting from rot. The floor is generally unsafe to walk on.
Analysis
The floor is currently not suitable for any type of occupancy. The timbers that have been affected by worms and rot should be replaced as needed. Additional structural supplementation work (additional timbers, etc.) may be required during repairs to meet code requirements for occupancy.

Loft Floor Framing Construction

Description

The loft floor framing in the timber framed portions consists of north-south oriented hewn beams at about 30” on center, let into the north and south horizontal girts and spanning the north-south length of the timber framed portion. 1” boards nailed transversely to the beams make up the floor. The loft floor framing in the stacked log portion consists of north-south oriented beams, let into the stacked timber. 1” boards, with the length running east-west, nailed to the beams, make up the floor.

Condition

The loft floor framing in the entire structure is in poor condition. A large portion of the floor boards were rotted or missing. The floor beams were observed to be rotted as well, with large section loss resulting from rot. The floor is generally unsafe to walk on in many spots.

Analysis

The loft floor is currently not suitable for any type of occupancy. The timbers that have been affected by worms and rot should be replaced as needed. Additional structural supplementation work (additional timbers, etc) may be required during repairs to meet code requirements for occupancy.

Items or Areas of Concern

Replace rotted wood

Replace all wood damaged by rot. In general, all wood at the first floor framing, portions of the stacked timber construction, and portions of the loft floor framing should be replaced.

Time frame for this work Prior to any occupancy

Replace severely beetle-damaged wood

Replace all severely beetle-damaged wood.

Time frame for this work Prior to any occupancy

Investigate minor beetle-damaged wood

Determine the extent of damage to the wood members by scanning with a non-destructive testing device. Replace members as necessary.

Time frame for this work Prior to any occupancy

Reinforce timber connections

The connections between members should be evaluated for the wind loads required by the current Minnesota State Building Code and reinforced as necessary if the structure is used for any occupancy other than agricultural operations.

Time frame for this work Prior to any change in occupancy

Investigate and repair loose rock piers

Investigate the stability of the rock piers that support the structure. Installation of frost depth concrete piers may be required.

Time frame for this work Within one year

Maintenance Considerations

Roof Areas

Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.

Time frame for this work Every 5 years

Foundation Walls

Periodically inspect and repair, if necessary, the masonry piers. Repoint eroded mortar, re-place dislodged or loose stones.

Time frame for this work Every 10 years

Exposed Exterior Wood

Periodically inspect and repair, if necessary, the siding, trim, windows and doors. Remove loose paint and repaint as necessary.

Time frame for this work Every 10 years

Summary

The Granary was observed to be in poor condition overall. Portions of the stacked timber and timber frame are in very poor condition and will require extensive repairs. Further in-depth investigation, design, and reinforcement of the structure is necessary if used for any future occupancy.



Granary
East Elevation



Granary
South Elevation



Granary
West Elevation
Stacked timber framing can be seen where the exterior siding is missing.



Granary
Newer roof framing and timber framed walls below.



Granary
Looking up at the roof from the line of the loft level.
Newer dimension lumber roof framing in the foreground. Hewn rafter roof framing in the background.



Granary
View at the first floor level with stacked timber walls in the background.



Granary
An example of the rotting deterioration that has occurred in the timber walls.



Granary
An example of the rotting deterioration that has occurred in the timber walls and floor.

Building Assessment – Smokehouse

Smokehouse
The Smokehouse is small structure constructed with brick and dimension lumber. The building is approximately 6' x 5' in plan dimension with brick masonry walls approximately 6'-6" tall. The roof over the building is a gable configuration of dimension lumber. The Smokehouse was constructed in 1901.

Description
The building walls consist of 8" thick brick masonry, a soft brick material likely Chaska brick, extending from grade level to approximately 6'-6" above grade. The foundations for the walls could not be observed, but it is likely that the masonry walls extend only a short distance below grade and rest on concrete or stone footings.
The roof over the Smokehouse consists of 2x4 and 1x4 rafters supporting 1x board sheathing. The roof is a gable configuration with the ridge extending east to west.
The floor of the Smokehouse is dirt.
There is a small window (used as a vent?) at the rear (east elevation) and a door at the front (west elevation).

Condition
The condition of the Smokehouse is considered good to very good. The brick masonry walls exhibited only limited and isolated evidence of mortar erosion and only occasional minor cracks in the mortar and brick units.
The roof framing is considered in good condition. There was no evidence of rotting, deterioration or damage in the wood framing members. It appears that the roofing, which consisted of cedar shingles was in good condition and maintaining a relatively watertight covering.
The foundations could not be observed, but no settlement, differential settlement or unusual movement was noted in the building. It appears that the building foundations are performing well.
Analysis
No analysis was performed for the building but based on the good performance of the structure, it appears to adequately resist the gravity and wind loads that have been imposed on the building over its lifespan. There is no reason to believe this would not be the case in the foreseeable future.

Items of Concern
There are no specific items of concern for the Smokehouse.

Maintenance Considerations

Exterior Brick Masonry Walls
Periodically inspect and repair, if necessary, brick masonry veneer. Repoint eroded mortar, re-place dislodged or loose brick.
Time frame for this work — Every 10 years.

Roof Areas
Periodically inspect and repair, if necessary, roofing materials. During repair work, inspect and repair if necessary, any discovered damage to underlying sheathing and framing.
Time frame for this work — Every 5 years.

Summary
In general, the Smokehouse was found to be in good to very good condition. The original framing appears to be intact and appears to be performing adequately. Very isolated and limited deterioration of masonry was noted and recommendations for addressing these issues as part of a maintenance program for the building is provided.



West elevation of the Smokehouse



Smokehouse from the southeast corner



Interior view of the Smokehouse



Detail view of the masonry over the entry door



Detail view of the masonry and roof eave at the southwest corner

Limiting Conditions:

The opinions and recommendations contained in this report are based on a cursory observation of the building. No attempt was made to perform an exhaustive investigation of all conditions and building elements. It is possible that conditions exist that cannot be discovered or judged as a result of this limited nature of investigation. The work provided in the preparation of the report concerns the structural system only and is not intended to address mechanical, electrical or plumbing systems, fire protection or handicap accessibility. The owner is encouraged to discuss these items with a building official and other design professionals for guidance and recommendations.

If you have any questions concerning the above, please do not hesitate to contact me.

Sincerely
Mattson Macdonald Young, Inc.

David H. Macdonald, P.E.

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

David H. Macdonald P.E.

7/31/2017 MN Reg. No. 14751

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April 28, 2016

Wendy Petersen Biorn
Executive Director
Carver County Historical Society
555 West First Street
Waconia, MN 55387

Re: Andrew Peterson Farm
North Barn Floor Structure

Dear Wendy:

As we discussed, the requirement to allow a public occupancy (assembly use) on the first floor level of the existing historic North Barn will require the addition of new framing members to reinforce the main timber beams under this floor. The work required to install these members is shown on plans and details that I have prepared and sent for your consideration.

During our discussions with the representatives of the Minnesota Historical Society, they expressed their concern that the addition of new framing members will adversely affect the planned work undertaken as a restoration and would be effectively changing the work to an adaptive re-use. It is my understanding that this may have an impact on the grant available for the project. I indicated that I would investigate the actual serviceable floor capacity and describe any limits on the use of the space that would not exceed the serviceable capacity without the need for reinforcing or enhancement.

I have found from my calculations that the existing floor structure, after repairs are made to the damaged and deteriorated members, will have a live load capacity equal to 60 psf. The list below indicates some representative live load capacities for floor structures occupied as shown.

Representative Required Live Load Capacities for Various Occupancies	
Assembly areas and theaters	
Fixed seating	60 psf
Lobbies and open areas	100 psf
Library reading rooms	60 psf
Office Buildings	
Lobbies and first floor corridors	100 psf
Offices	50 psf
Residential	
Habitable attics and sleeping areas	30 psf
Private rooms	40 psf
Schools	
Classrooms	40 psf
First floor corridors	100 psf
Stores - Retail	
First floor	100 psf
Upper floors	75 psf

As you can see, a strict interpretation of the code requirements for the North Barn floor if it is considered an assembly area will require a 100 psf live load capacity. However, I believe it is worth considering how this space may actually be used and occupied when it is functioning as a museum space to aid in the interpretation of the Peterson Farmstead. I offer the following consideration:

The first floor space of the North Barn is approximately 30 ft x 20 ft in size, or 600 sq ft in area. If the entire floor area were loaded to its serviceable capacity of 60 psf, a total load of (60 psf x 600 sq ft =) 36,000 pounds could safely be supported.

Live load is considered not only the weight of people occupying a space, but also the weight of moveable fixtures, finishes and furniture. Making a quite conservative assumption that 2/3 of the total load capacity might be used up by fixtures, displays and equipment (24,000 pounds) would leave 12,000 pounds available for occupancy by people.

The average weight of an adult female is 166 pounds, and for an adult male the average weight is 196 pounds according to the Center for Disease Control. Using a conservative value of 200 pounds for all occupants of the space, up to 60 people could be in the space provided they were evenly distributed. Since exhibits, equipment and furnishings may take up some of the space, I assume that the occupants may be isolated to only 1/3 of the floor space, in which case the number of occupants would be limited to 20.

Using the rationale described above, it is my opinion that limiting the occupancy of the space to no more than 20 occupants will not have an adverse effect on the existing floor framing and can be safely accommodated without the need for additional floor reinforcing or enhancement. I believe that the use of the space in this fashion might be considered similar to a school classroom which, as shown in the table above, has a live load capacity requirement of 40 psf.

I would recommend that you initiate a discussion with the local building official using the points that I have outlined above to see if he or she would find it acceptable to allow the use of the North Barn Floor structure with a posted occupancy limit of 20 persons without the need to provide additional reinforcing or enhancement of the existing framing. I will make myself available to participate in that discussion if necessary.

The above discussion, of course, assumes that the structural restoration work originally shown on the structural drawings issued by this office in 2011 will be completed before any occupancy is allowed.

If you have any questions concerning the above, please do not hesitate to contact me.

Sincerely
Mattson Macdonald Young, Inc.



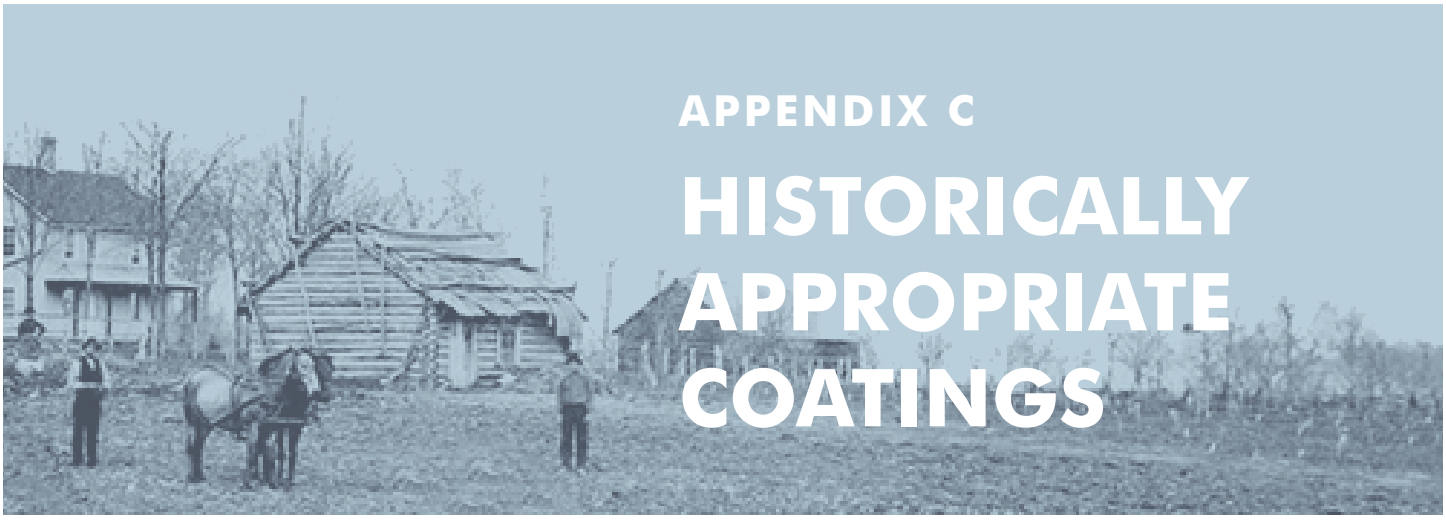
David H. Macdonald P.E.

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.



David H. Macdonald P.E.

4/28/2016 MN Reg. No. 14751



APPENDIX C

HISTORICALLY APPROPRIATE COATINGS

HISTORICALLY APPROPRIATE COATINGS

The historically appropriate coatings for the house and the barn exteriors have been determined according to historical research, photographic evidence, and on-site investigations.

Whitewash

According to Ward Bucher's *Dictionary of Building Preservation* (published John Wiley & Sons, Inc., New York, 1996), whitewash is a surface coating applied as a creamy paste composed of slaked lime and water, and sometimes other ingredients such as salt, sugar, or whiting. It was most commonly used as an interior wall and ceiling finish before 19c, then commonly used on exterior wood, masonry, and concrete, or interior surfaces below grade.

According to Andrew Peterson's diary entries, he whitewashed many surfaces on both the exterior and interior of his early residences and outbuildings. The first mention of whitewash was in 1871, when Peterson's wife Elsa whitewashed one of their early residences.[1] Whitewash was applied on this early log structure annually for at least the next five years as part of annual maintenance for the residence.[2]

Once the Peterson's farmhouse was built, whitewash was also applied as its primary interior coating. The diary mentions whitewash was used as a coating in the upstairs rooms,[3] and other places in the house.[4]

Paint scrapings were taken from many painted surfaces in the house. The historically appropriate



Figure 153: Whitewash color for the window trim and plaster walls in the Farmhouse, Sherwin Williams SW 0035 "Indian White."

1 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, May 25, 1871.

2 Ibid, December 11, 1876.

3 Ibid, October 19, 1878.

4 Ibid, May 26, 1886.

finishes were determined by matching the lowest layer of finish. Please refer to the Farmstead section of this report for more information and specific recommendations.

Paint

The first mention of paint in Andrew Peterson's diary, was in 1868, when Peterson paints the roof borders on the house.[5] The early paint was hand-mixed, and the first time the diary says he went into town to buy paint was in 1877, when he went to Waconia for house paint.[6]

Paint analysis was done on the siding on the south side of the house on the interior of the south porch. This portion was used to determine the original paint color because it was originally on the exterior of the house, but has been protected by the elements and sun damage by the porch addition. The historically appropriate exterior coating for the farmhouse is paint in the Sherwin Williams SW 6235 "Foggy Day" color. The exterior wood trim was painted the SW 0035 "Indian White" color.

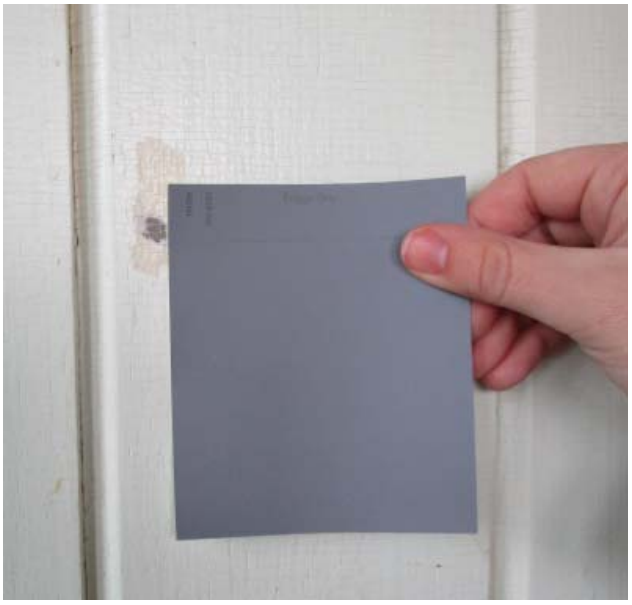


Figure 154: Exterior paint color for the Farmhouse, Sherwin Williams SW 6235 "Foggy Day."

A timber that appears to be a porch post from the house (based on historic photographs) is in the South Barn. That post is red and paint analysis showed several layers of red paint. While the historic photographs are black and white, the porch posts, porch floors, and porch roof fascia appear the same gray tone as the barns. Andrew Peterson routinely mixed paint and pigments, but he was also practical. It is assumed that the red of the porch posts is the same as the red of the barns during the period of significance of the farmstead. That red color is matched to Sherwin Williams Solo Paint (semi-gloss or gloss) pigmented as follows:

Colorant	oz.	32	64	128
B1-Black	-	57	1	1
R2-Maroon	2	40	1	-
R3-Magenta	6	45	1	1

5 Ibid, October 16, 1868.

6 Ibid, August 30, 1877.

The appropriate gloss level for modern paint replicating historic linseed oil-based paint is Gloss or Semi-Gloss depending on the manufacturer and paint type.

The diary mentions that the corn crib, the granary, and the barns were painted. The historically appropriate paint for these buildings was determined to be a red, glossy paint. The use of red paint was mentioned in the diary.[7] In addition, although the historic photographs from 1885 are in black and white, the barns are much darker than the cabin, which was not painted. From these photographs, we can also see that the window frames of the barns were very light, and appear to be painted white.

The exact barn red color was found through research on historic red barn paint, mixed, and verified on site. The North Barn was painted this color and sheen in the recent construction project.

7 Andrew Peterson, The Diary of Andrew Peterson 1855-1898, June 14, 1888.

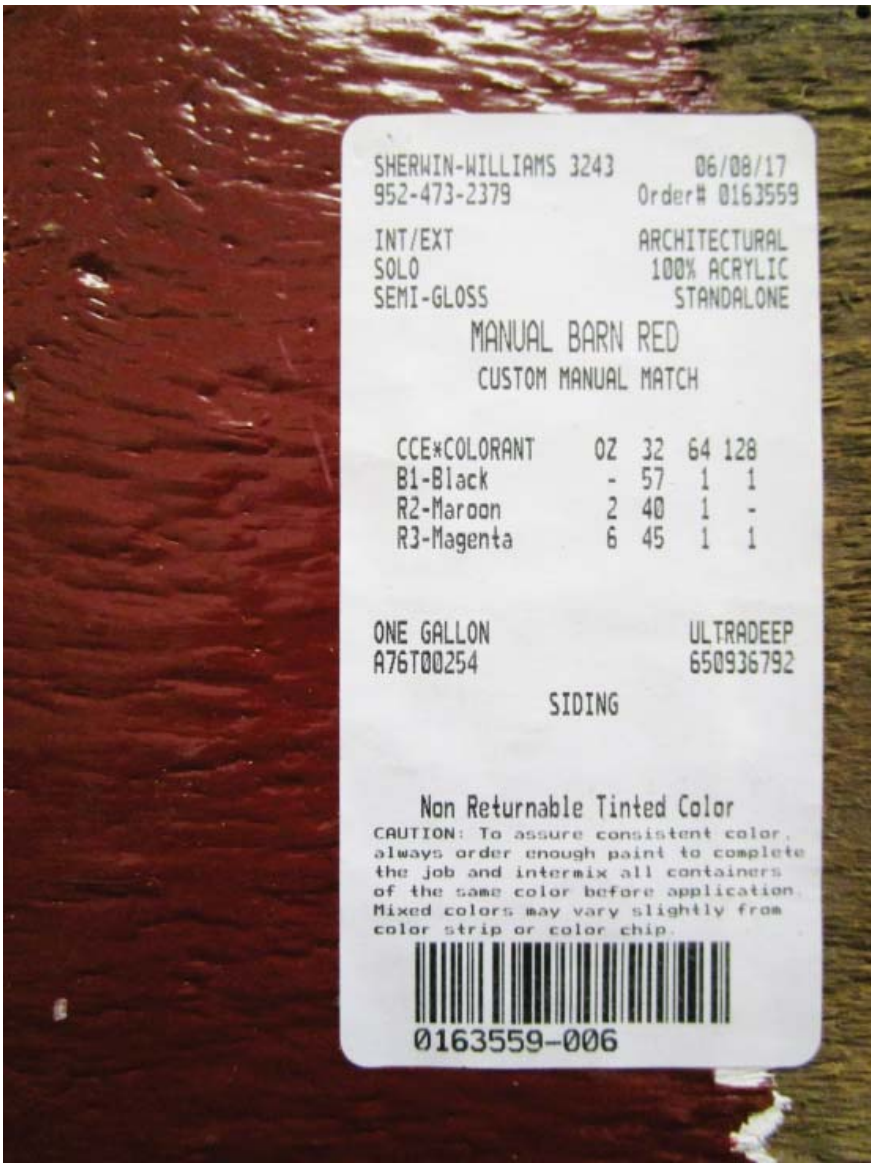


Figure 155: Exterior paint color formula for the barns and the Granary.



APPENDIX D

PETERSON FARM
IN THE 20TH CENTURY

THE PETERSON FARM IN THE 20TH CENTURY

By Rolf Anderson

After Andrew Peterson's death in 1898, his family continued to operate the farm. There are two major sources of information about the family and their activities during the years following his death. Brief biographical information is found in Andrew Peterson and the Scandia Story by historian Josephine Mihelich. Detailed information about the operation of the farm is found in the farm's cash account books that family members continued to maintain.[1] The cash account books list both income and expenses for the farm through 1931, although the entries are less detailed than Andrew's income and expense entries, and they became increasingly brief in later years. For purposes of presenting this information, the income and expense entries are organized into roughly 10-year segments.

The primary reason for presenting this information is to determine if it is reasonable to explore the possibility of expanding the Period of Significance for the property. Based on the current National Register Nomination, the Period of Significance ends with Andrew Peterson's death in 1898. The question is whether the Period of Significance could be expanded into the 20th century. Carver County Historical Society is particularly interested in the activities of Elsa Peterson in the 20th century, as well as activities associated with Andrew Peterson's horticultural work with apples that might have been continued into the 20th century.

INCOME AND EXPENSES FROM 1898-1909

Income

The primary source of income in 1898 was the sale of wheat; next came livestock sales followed by the sale of wood. Total farm income in 1899 was $1,204.90, largely from wheat, livestock, and wood. In addition, one dozen apple trees were sold to H. Peterman for $2.50 and 140 bushels of apples were sold for $103.00. Nine gallons of syrup were sold for $3.60. In 1900, income dropped to $763.80. Twenty-eight apples trees were sold along with 75 bushels of apples.

Income rose in 1901 to $1,578.00, including $354.00 for 395 bushels of apples and $402.94 for milk. 1901 was the first year that milk was listed as an income producing commodity. In 1902, income totaled

1 Cash Account Books. Andrew Peterson and Family Papers. Minnesota Historical Society.

$1,370.00, including $512.10 for milk, and $102.10 for apples. Fifty-four apple trees were sold for $10.50.

Similar income patterns continued from 1902-1909. Annual income ranged from $1,422.29 to $2,850.10. Wheat was sold, and in some years corn and oats were sold, and at times seed was sold. Livestock also continued to be sold. In some years, wood was an important source of income. Milk often provided in the range of one-third of total income, and provided 42% of income in 1908. The sale of apple trees appears to have been discontinued. In some years no apples were sold, and in other years the income ranged for $37.00 to $400.35. Selected entries include:

> April 26, 1899 – Received for premiums at the state fair - $35.50.
>
> April 14, 1901 – Received of Scandia Baptist Church for communion wine for 1901 - $2.00.
>
> May 4, 1904 – Sold the three-year old colt Barney to Chas. Anderson; received payment in full - $100.00.
>
> May 23, 1907 – Sold 107 bu(shels)……wheat - $103.20.

Expenses

The first entry after Andrew's death is dated April 6, 1898 and lists an expense for his funeral. In general, there are repetitive entries for expenses such as taxes and insurance. There are also on-going payments to Peterman, Peltz, and Co. for harvesting crops such as wheat, oats, and barley. There are also on-going expenses for purchasing farm equipment and livestock, and for various repairs and building projects. And there were payments for subscriptions, including the Minneapolis Journal, Horticulturist, and Farm, Stock, and Home.

Beginning in 1899, but effective with 1898, John, Frank, Ida, and Josephine were paid wages for their work on the farm. Wages continued to be paid at regular intervals in successive years. In 1901, Emma was listed as a recipient of several payments. But she was not an on-going recipient of wages until 1909, when she likely returned from Maynard after Josephine's death in 1908. There is no record of Elsa receiving wages, nor did Oscar, the son who was believed to have been developmentally disabled.

Most entries relate to a specific expense, but occasionally certain activities or events are mentioned, such as noting how many acres of a specific crop were planted. Selected entries include:

April 6, 1898 – Paid R. Rouen for funeral supply (for Andrew) - $51.00.

November 14, 1898 – Paid C. Klatt for making the foundation under the addition to the barn - $2.50.

April 24, 1899 – Reserved wall paper from A. H. Remmy 24 rolls at 12½ ct (cents) per single roll - $3.00. 30 yd border at 3 ct - $1.10.

March 17, 1900 – Paid B. Rouen for (Ida's) casket - $50.00.

December 14, 1900 - Sent to Cable Piano Co., Minneapolis, for piano; paid by Emma & Josephine - $200.00.

May 9, 1901 – Paid taxes on Minneapolis lot; Mother's share - $3.84.

October 23, 1901 – Paid C. Klatt for building a smokehouse - $5.50.

April 10, 1907 – Paid Norwood Telephone Co. one year in advance - $11.40.

May 23, 1907 – The mare Pet foaled.

INCOME AND EXPENSES FROM 1910-1919

Income

Farm income for the decade from 1910-1919 followed earlier patterns. The main sources were from the sale of crops, livestock, and milk. However, by the end of the decade, wood was no longer being sold. Similarly, the sale of apples also ended. There is no record of the sale of any apple trees in this time period. Small quantities of apples were sold in 1910 through 1913. But there were no apple sales after 1913. Farm income fluctuated throughout the decade and reached a peak of $6,155.30 in 1919 and declined thereafter. The sale of milk also peaked in 1919.

Expenses

Farm expenses for the decade from 1910-1919 also followed earlier patterns. There were payments for harvesting crops, the purchase of livestock, and for supplies and materials for the farm. There are a number of expense entries in 1914 for the purchase of construction materials for the new barn and for payments to the construction workers. A notable event in 1917 was the introduction of electricity to the farmhouse and barn. Beginning in 1918, Charles (Carl) was paid wages along with Emma, John, and Frank, which signaled his return from the farm in Maynard. Selected entries include:

> June 27, 1914 – Paid Chas. Klatt, Jr. for building barn foundation - $92.75.
>
> July 20, 1914 – Paid John Pofahl part for carpenter work on barn - $100.00.
>
> June 24, 1915 – Paid C. Klatt for making cistern - $5.00.
>
> November 23, 1917 – Paid Waconia Light & Power Co. for installing lights in (the) house and barn. Turned lights on Nov. 20th - $209.30.

INCOME AND EXPENSES FROM 1920-1931

The years 1920-1931 were an eventful decade for the Peterson family. Frank died in 1921, Elsa died in 1922, and John, known as Axel, died in 1930. George, known as Sture, died in 1928, although he had been living on his own farm near Maynard. Over the decade, the number of income and expense entries decreased. For example, in 1931 there was only one expense entry. The recording might have been less complete than previous years, but the farm was also impacted by the onset of the Great Depression when farm income would have plummeted. The income and expense entries ceased in 1931.

Income

Farm income for the decade from 1920-1931 following earlier patterns, and included the sale of crops, livestock, and milk. However, in time the sale of milk became the largest source of income. Income from milk remained stable until 1930 when no milk sales were recorded. Nor were there any sales of milk recorded for 1931.

Expenses

Farm expenses for the decade from 1920-1931 were consistent with prior years, although there were entries for larger amounts for the payment of wages to hired help. The single expense entry in 1931 was for a subscription to the Waconia Patriot. Selected entries include:

> April 18, 1921 – Bought ½ dozen Wealthy apple trees of Herbert Souter - $6.00.
>
> March 16, 1922 – (Elsa's) . . . funeral ex(pense) - $337.00.
>
> January 17, 1931 – To Waconia Patriot - $6.00.

CONCLUSIONS

The cash account books maintained by the Peterson family provide useful information about the operation of the farm in the 20th century. However, they lack the wealth of detail found in Andrew's diaries and in the cash account books that he maintained. In addition, once the children were receiving their own wages, many types of expenditures such as those for clothing and other personal items were no longer itemized.

There is little documentation about Elsa's role on the farm after Andrew's death. She is only mentioned in two entries in the cash account books; once in regard to the payment of taxes on a lot that the family owned in Minneapolis, and also in regard to the payment of her funeral expenses. Moreover, all the Peterson children were adults at the time of their father's death, and they had also been operating the family farm near Maynard. Therefore, it is reasonable to conclude that the Peterson children assumed greater responsibility for the operation of the farm as their mother aged. This does not diminish Elsa's contributions to the farm. However, her activities are recorded in remarkable detail in Andrew's diary and account books. Thus, substantial documentation exists to precisely acknowledge her important role on the farm.

There is no documentation that the experimentation with apples continued after Andrew's death. Only a small quantity of apple trees were sold in the early years of the 20th century, and the sale of apples ceased entirely after 1913. In fact, six apple trees were purchased in 1921.

The construction of the 1914 barn represents an improvement in the facilities for the diary operation that had been established earlier. And the sales of milk increased after the building was constructed. However, the dairy operation represents the diversification taking place on many Minnesota farms during the period rather than a significant activity in its own right.

Thus, while the documentation about the Peterson Farm in the 20th century is both useful and informative, it does not appear to justify extending the Period of Significance into the 20th century. National Register Bulletin 16A states, "Continued use or activity does not necessarily justify continuing the period of significance." The activities on the Peterson Farm appear consistent with those on other Minnesota farms from the era. While we conclude that the National Register of Historic Places Nomination for the Peterson Farm correctly placed the Period of Significance in the 19th century, this topic may be discussed further with the State Historic Preservation Office.



APPENDIX E

WATER TESTING
FROM THE SITE

MINNESOTA VALLEY TESTING LABORATORIES, INC.
1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724
1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.mvtl.com
MEMBER ACIL

Report Date: 7 Feb 2017

Lab Number: 17-A3154
Work Order #: 201705156

CARVER CO. HISTORICAL SOCIETY
555 W. 1ST ST
WACONIA MN 55387

PO #: PD CC 3225

Date Received: 26 Jan 2017
Time Received: 9:10
Date Sampled: 25 Jan 2017
Time Sampled: 15:40
Temperature at Receipt: AMBIENT

Sample Description: CARVER CO. HISTORICAL SOCIETY

Analyte	Results	MCL	RAL	Method	Analyzed	Analyst
Coliform, Colilert	Absent	Absent	NA	SM 9223B-2004	1/26/17 10:15	MDH
Lead	< 0.5 ug/L	15.0	NA	200.8	1/31/17 20:28	RMV
Nitrate+Nitrite	< 0.05 mg/L as N	10.0	NA	EPA 353.2	2/ 1/17 13:37	MRW
Arsenic	1.84 ug/L	10.0	NA	200.8	1/31/17 20:28	RMV

Amended Report-Added lead 6FEB17

MCL is defined as the Maximum Contaminant Level allowed by the Safe Drinking Water Act. RAL is the Recommended Allowable Limit. For further information, contact your state or local health department or call the EPA Safe Drinking Water Hotline 1-800-426-4791.

Approved by:

Dan O'Connell, Chemistry Lab Manager New Ulm, MN

Mike Smoley, Microbiology Lab Manager New Ulm, MN

Analyses performed under our Minnesota Department of Health Accreditation conform to the current TNI standards.

The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to concentration of other analytes
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.



APPENDIX F

LEAD-SAFE GUIDE

United States
Environmental Protection
Agency

Office of Chemical Safety and
Pollution Prevention
EPA-740-K-10-003
September 2011



Small Entity Compliance Guide to Renovate Right

EPA's Lead-Based Paint Renovation, Repair, and Painting Program

A handbook for contractors, property managers and maintenance personnel working in homes and child-occupied facilities built before 1978.





LEAD-SAFE EPA CERTIFIED FIRM

Who Should Read this Handbook?

- Anyone who owns or manages housing or child-occupied facilities built before 1978.
- Contractors who perform activities that disturb painted surfaces in homes and child-occupied facilities built before 1978 (including certain repairs and maintenance, and painting preparation activities).

About this Handbook

This handbook summarizes requirements of EPA's 2008 Lead-Based Paint Renovation, Repair and Painting Program Rule (as amended in 2010 and 2011), aimed at protecting against lead-based paint hazards associated with renovation, repair and painting activities. The rule requires workers to be trained to use lead-safe work practices and requires renovation firms to be EPA-certified; these requirements became fully effective April 22, 2010.

To ensure compliance, you should also read the complete rule on which the program is based. While EPA has summarized the provisions of the rule in this guide, the legal requirements that apply to renovation work are governed by EPA's 2008 Lead Rule. A copy of the rule is available on EPA's website at **www.epa.gov/lead/pubs/renovation.htm**.

A companion pamphlet, entitled *The Lead-Safe Certified Guide to Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools* (EPA-740-K-10-001), has been prepared in conjunction with the rule for distribution to persons affected by work that disturbs lead-based paint. (See page 17 for information on how to get copies of the rule, the *Renovate Right* pamphlet, and other related materials.)

Other state or local requirements that are different from or more stringent than the federal requirements may apply in your state. For example, federal law allows EPA to authorize states to administer their own program in lieu of the federal lead program. Even in states without an authorized lead program, a state may promulgate its own rules that may be different or go beyond the federal requirements. For more information on the rules that apply in your state, please contact the National Lead Information Center at 1-800-424-LEAD (5323).

Your feedback is important. Please review this guide and contact the National Lead Information Center at 1-800-424-LEAD (5323) with any comments regarding its usefulness and readability, and improvements you think are needed.

This document is published by the Environmental Protection Agency (EPA) as the official compliance guide for small entities, as required by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). Before you begin using the guide, you should know that the information in this guide was originally published in June 2008, and was revised in July 2010 and September 2011 to address regulatory revisions. EPA is continually improving and upgrading its rules, policies, compliance programs, and outreach efforts. To find out if EPA has revised or supplemented the information in this guide call the National Lead Information Center at 1-800-424-LEAD (5323).

What Is the Lead-Based Paint Renovation, Repair and Painting Program (RRP)?

- The Lead-Based Paint Renovation, Repair and Painting Program is a federal regulatory program affecting contractors, property managers, and others who disturb painted surfaces.
- It applies to residential houses, apartments, and child-occupied facilities such as schools and day-care centers built before 1978.
- It includes pre-renovation education requirements as well as training, certification, and work practice requirements.
  - Pre-renovation education requirements:
    - Contractors, property managers, and others who perform renovations for compensation in residential houses, apartments, and child-occupied facilities built before 1978 are required to distribute a lead pamphlet before starting renovation work.
  - Training, certification, and work practice requirements:
    - Firms are required to be certified, their employees must be trained (either as a certified renovator or on-the-job by a certified renovator) in use of lead-safe work practices, and lead-safe work practices hat minimize occupants' exposure to lead hazards must be followed.
  - Renovation is broadly defined as any activity that disturbs painted surfaces and includes most repair, remodeling, and maintenance activities, including window replacement.
  - The program includes requirements implementing both Section 402(c) and 406(b) of the Toxic Substances Control Act (TSCA). (**www.epa.gov/lead/pubs/titleten.html**)
  - EPA's lead renovation regulations can be found at 40 CFR Part 745, Subpart E.

How Can this Handbook Help Me?

- Understanding the lead program's requirements can help you protect your customers from the hazards of lead and can, therefore, mean more business for you.
- This handbook presents simple steps to follow to comply with the EPA's lead program. It also lists ways these steps can be easily incorporated into your work.
- Distributing the lead pamphlet and incorporating required work practices into your job site will help protect your customers and occupants from the hazards of lead-based paint.

Who Must Follow the Renovation, Repair and Painting Rule's Requirements?



In general, anyone who is paid to perform work that disturbs paint in housing and child-occupied facilities built before 1978, this may include, but is not limited to:

- Residential rental property owners/managers
- General contractors
- Special trade contractors, including
  - Painters
  - Plumbers
  - Carpenters
  - Electricians

What Activities Are Subject to the Lead Renovation, Repair and Painting Program?

In general, any activity that disturbs paint in pre-1978 housing and child-occupied facilities, including:



- Remodeling and repair/maintenance
- Electrical work
- Plumbing
- Painting preparation
- Carpentry
- Window replacement

What Housing or Activities Are Excluded and Not Subject to the Rule?

- Housing built in 1978 or later.
- Housing for elderly or disabled persons, unless children under 6 reside or are expected to reside there.
- Zero-bedroom dwellings (studio apartments, dormitories, etc.).
- Housing or components that have been declared lead-free. Such a declaration can be made by a certified inspector or risk assessor. Also, a certified renovator may declare specific components lead-free using an EPA recognized test kit or by collecting paint chip samples and obtaining test results from an EPA recognized laboratory showing the components do not contain lead-based paint.
- Minor repair and maintenance activities that disturb 6 square feet or less of paint per room inside, or 20 square feet or less on the exterior of a home or building.
  - Note: minor repair and maintenance activities do not include window replacement and projects involving demolition or prohibited practices.

What Does the Program Require Me To Do?

Pre-renovation education requirements.

- In housing built before 1978, you must:
  - Distribute EPA's lead pamphlet (**www.epa.gov/lead/pubs/brochure.htm**) to the owner and occupants before renovation starts.
- In a child-occupied facility, you must:
  - Distribute the lead pamphlet to the owner of the building or an adult representative of the child-occupied facility before the renovation starts.
  - Either distribute renovation notices to parents/guardians of the children attending the child-occupied facility, or post informational signs about the renovation or repair job.
- For work in common areas of multi-family housing, you must:
  - Either distribute renovation notices to tenants or post informational signs about the renovation or repair job.
- Informational signs must:
  - Be posted where they will be seen;
  - Describe the nature, locations, and dates of the renovation; and
  - Be accompanied by the lead pamphlet or by information on how parents and guardians can get a free copy (see page 29 for information on obtaining copies).
- Obtain confirmation of receipt of the lead pamphlet (see page 23) from the owner, adult representative, or occupants (as applicable), or a certificate of mailing from the post office.
- Retain records for three years.
- *Note:* Pre-renovation education requirements do not apply to emergency renovations. Emergency renovations include interim controls performed in response to a resident child with an elevated blood-lead level.

Training, Certification, and Work Practice Requirements.

- All firms must be certified (even sole-proprietors).
- All renovators must be trained.
- Lead-safe work practices must be followed. Examples of these practices include:
  - Work-area containment to prevent dust and debris from leaving the work area.
  - Prohibition of certain work practices like open-flame burning and the use of power tools without HEPA exhaust control.
  - Thorough clean up followed by a verification procedure to minimize exposure to lead-based paint hazards.

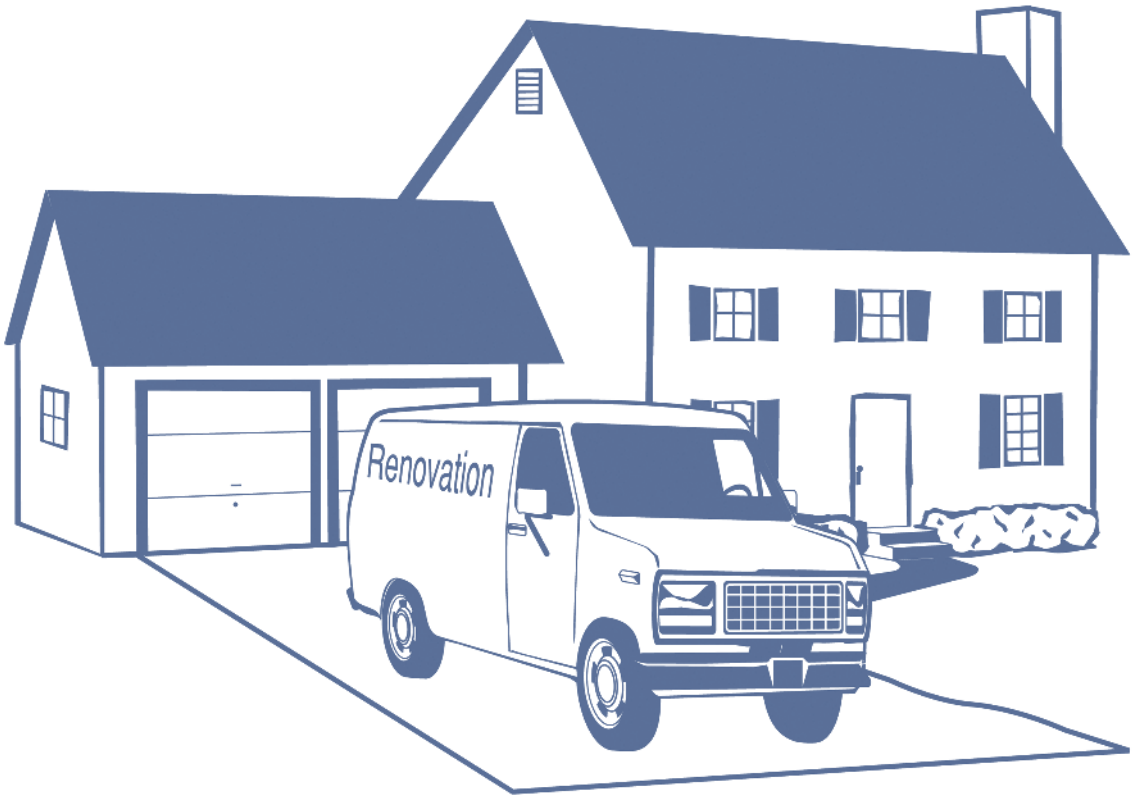
How Does a Firm Become Certified?

Firms must apply to EPA for certification to perform renovations or dust sampling. To apply, a firm must submit to EPA a completed "Application for Firms," signed by an authorized agent of the firm, and pay the correct amount of fees. To obtain a copy of the "Application for Firms" contact the NLIC at 1-800-424-LEAD (5323) or visit **www.epa.gov/getleadsafe**.

What Are the Responsibilities of a Certified Firm?

Firms performing renovations must ensure that:

1. All individuals performing activities that disturb painted surfaces on behalf of the firm are either certified renovators or have been trained by a certified renovator.
2. A certified renovator is assigned to each renovation and performs all of the certified renovator responsibilities.
3. All renovations performed by the firm are performed in accordance with the work practice standards of the Lead-Based Paint Renovation, Repair, and Painting Program (see the flowchart on page 9 for details about the work practice standards).
4. Pre-renovation education and lead pamphlet distribution requirements of the Lead-Based Paint Renovation, Repair, and Painting Program are performed.
5. The program's recordkeeping requirements are met.



How Does a Renovator Become Certified?

To become a certified renovator an individual must successfully complete an eight-hour initial renovator training course offered by an accredited training provider (training providers are accredited by EPA, or by an authorized state or tribal program). The course completion certificate serves as proof of certification. To find a trainer in your area contact the NLIC at 1-800-424-LEAD (5323) or visit **www.epa.gov/getleadsafe**.

Are There Streamlined Requirements for Contractors with Previous Lead Training?

Yes. Individuals who have successfully completed an accredited lead abatement worker or supervisor course, or individuals who have successfully completed certain EPA, Department of Housing and Urban Development (HUD), or EPA/HUD model renovation training courses before October 4, 2011, need only take a four-hour refresher renovator training course instead of the eight-hour initial renovator training course to become certified. For a list of qualified previous training courses contact the NLIC at 1-800-424-LEAD (5323) or visit **www.epa.gov/lead/pubs/trainerinstructions.htm#refresher**.

What Are the Responsibilities of a Certified Renovator?

Certified renovators are responsible for ensuring overall compliance with the Lead-Based Paint Renovation, Repair, and Painting Program's requirements for lead-safe work practices at renovations they are assigned (see the flowchart on page 9 for details about the work practice standards). A certified renovator:

1. Must provide on-the-job training to other workers (who have not taken the certified renovator training course) on the lead safe work practices to be used in performing their assigned tasks.
2. Must be physically present at the work site when warning signs are posted, while the work-area containment is being established, and while the work-area cleaning is performed.
3. Must regularly direct work being performed by other individuals to ensure that the work practices are being followed, including maintaining the integrity of the containment barriers and ensuring that dust or debris does not spread beyond the work area.
4. When requested by the party contracting for renovation services, must use an EPA recognized test kit or must collect paint chip samples, submit them to an EPA-recognized laboratory, and obtain test results from the laboratory to determine whether components affected by the renovation contain lead-based paint. (For more information regarding test kits call the National Lead Information Center at 1-800-424-LEAD (5323), or check our web site at **www.epa.gov/lead/pubs/renovation.htm**). Note: you must assume lead-based paint is present for housing and buildings covered by this rule, unless testing is done that determines the components affected are lead-free.
5. Must be available, either on-site or by telephone, at all times renovations are being conducted.
6. Must perform project cleaning verification.
7. Must have with them at the work site copies of their initial course completion certificate and their most recent refresher course completion certificate.
8. Must prepare required records.

How Long Do Firm and Renovator Certifications Last?

To maintain their certification, individual renovators and firms must be re-certified by EPA every five years. A firm must submit to EPA a completed "Application for Firms," signed by an authorized agent of the firm, and pay the correct amount of fees. Individual renovators must successfully complete a refresher training course provided by an accredited training provider.

What Are the Recordkeeping Requirements?

- All documents must be retained for three years following the completion of a renovation.
- Records that must be retained include:
  - Reports certifying that lead-based paint is not present.
  - Records relating to the distribution of the lead pamphlet.
  - Documentation of compliance with the requirements of the Lead-Based Paint Renovation, Repair, and Painting Program. This information must also be given to the owner and, if different, the occupant of the housing or unit that was renovated (EPA has prepared a sample form that is available at **www.epa.gov/lead/pubs/samplechecklist.pdf**).

What Are the Required Work Practices?

The flow charts on the following pages will help determine if your project is subject to the Lead-Based Paint Renovation, Repair and Painting Program's requirements and, if so, the specific requirements for your particular project. The flowcharts, and other information included in this guide, are not intended to be a replacement for official training.

EPA's Lead Program Rule At-A-Glance

Do the Requirements Apply to the Renovation?

If you will be getting paid to do work that disturbs painted surfaces in a pre-1978 home, apartment building, or child-occupied facility, answer the questions below to determine if the EPA lead program requires you to distribute the lead pamphlet and/or if you will need to comply with training, certification, and work practice requirements when conducting the work.

Does the job involve activities that disturb painted surfaces in a home or child-occupied facility built before 1978?

NO → **EPA lead-based paint renovation, repair, and painting program requirements do not apply.**

YES

Are ANY of the following conditions present?

- The work is a lead abatement project.
- Work consists of only minor repairs or maintenance that disturb 6 square feet or less of painted surfaces per room for interior activities or 20 square feet or less of painted surface for exterior activities. **Note:** this does not include window replacement, demolition, and projects involving prohibited practices.
- Housing has been determined to be free of lead-based paint either by a certified inspector or risk assessor, or the components being renovated have been determined to be free of lead-based paint by a certified renovator using either an EPA recognized test kit or laboratory analysis of collected paint chip samples.
- Housing is a zero-bedroom dwelling (studio apartments, dormitories, etc.).
- Housing is for the elderly or disabled and no children under six reside or are expected to reside there.

YES → **EPA lead-based paint renovation, repair, and painting program requirements do not apply.**

NO

Is the project an emergency renovation?

Emergency renovations are:

1. Activities that were not planned and if not immediately attended to present a safety hazard or threaten equipment and/or property with significant damage.

OR

2. Interim controls performed in response to an elevated blood lead level in a resident child.

YES → **Pre-renovation education requirements of the program do not apply.**

See Flow Chart 3 to determine which specific renovation training and work practice requirements apply to the job.

NO

You will need to provide the lead pamphlet. See Flow Chart 2 for specific requirements.

How Do I Comply with the Pre-Renovation Education Requirements?

Requirements to distribute pre-renovation educational materials vary based on the location of the renovation. Select the location below that best describes the location of your project, and follow the applicable procedure on the right.

Renovations in Owner-Occupied Dwelling Units

Deliver lead pamphlet (**www.epa.gov/lead/pubs/brochure.htm**) to owner before renovation begins and obtain confirmation of receipt.

OR

Mail lead pamphlet to owner 7 days before renovation begins and document with certificate of mailing.

Renovations in Tenant-Occupied Dwelling Units

1. Provide lead pamphlet to owner using either procedure described in the box at the top of this page.
2. Provide lead pamphlet to tenant by either method below:
   (a) Deliver pamphlet to dwelling unit before renovation begins and document delivery with either a confirmation of receipt of lead pamphlet or a self-certification of delivery.

OR

   (b) Mail lead pamphlet to tenant at least 7 days prior to renovation and document with a certificate of mailing.

Renovations in Common Areas of Multi-Family Housing Units

1. Provide owner with lead pamphlet using either procedure described in the box at the top of this page.
2. Notify tenants and make pamphlet available, or post signs describing the renovation. The signs must include the pamphlet or information on how to review a copy.
3. Maintain written documentation describing notification procedures.
4. Provide supplemental renovation notice if changes occur in location, timing, or scope of renovation occurring.

Renovations in Child-Occupied Facilities

1. Provide the owner of the building with the lead pamphlet using either:
   (a) The procedure described in the box at the top of this page.

OR

   (b) If the child-occupied facility is not the building owner, provide the lead pamphlet by either method below:
   (i) Obtain a written acknowledgment that an adult representative received the pamphlet; or certify in writing that a pamphlet was delivered.

OR

   (ii) Obtain a certificate of mailing at least 7 days before the renovation.

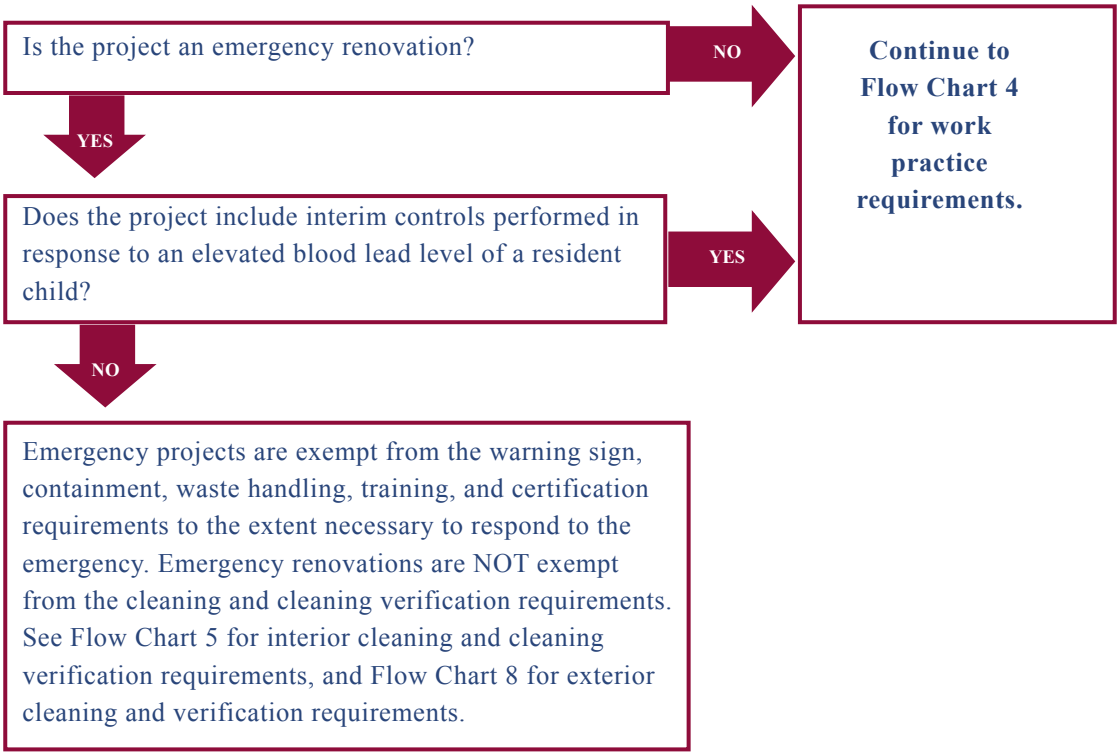
2. Provide the parents or guardians of children using the childoccupied facility with information by either of these methods:
   (a) Mail or hand-deliver the lead pamphlet and renovation information to each parent or guardian.

OR

   (b) Post signs describing the renovation. The signs must include the pamphlet or information on how to review a copy.

See Flow Chart 3 for information about specific training and work practice requirements for the job.

Do the Renovation Training and Work Practices Apply?



Work Practice Requirements

General

(A) Renovations must be performed by certified firms using certified renovators.

(B) Firms must post signs clearly defining the work area and warning occupants and other persons not involved in renovation activities to remain outside of the work area. These signs should be in the language of the occupants.

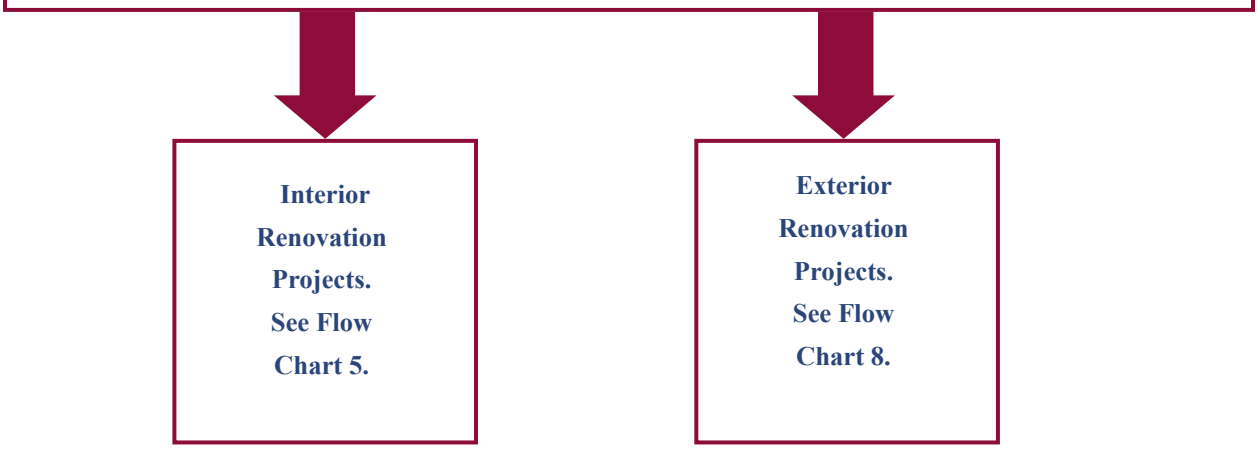
(C) Prior to the renovation, the firm must contain the work area so that no dust or debris leaves the work area while the renovation is being performed.

(D) Work practices listed below are prohibited during a renovation:

1. Open-flame burning or torching of painted surfaces;
2. Use of machines that remove paint or other surface coatings through high speed operation such as sanding, grinding, power planing, needle gun, abrasive blasting, or sandblasting, unless such machines have shrouds or containment systems and are equipped with a HEPA vacuum attachment to collect dust and debris at the point of generation. Machines must be operated so that no visible dust or release of air occurs outside the shroud or containment system; and
3. Operating a heat gun on painted surfaces at temperatures above 1100 degrees Fahrenheit.

(E) Waste from renovations:

1. Waste from renovation activities must be contained to prevent releases of dust and debris before the waste is removed from the work area for storage or disposal.
2. At the conclusion of each work day and at the conclusion of the renovation, waste that has been collected from renovation activities must be stored to prevent access to and the release of dust and debris.
3. Waste transported from renovation activities must be contained to prevent release of dust and debris.



Work Practice Requirements Specific to Interior Renovations

The firm must:

(A) Remove all objects from the work area or cover them with plastic sheeting with all seams and edges sealed.

(B) Close and cover all ducts opening in the work area with taped-down plastic sheeting.

(C) Close windows and doors in the work area. Doors must be covered with plastic sheeting.

(D) Cover the floor surface with taped-down plastic sheeting in the work area a minimum of six feet beyond the perimeter of surfaces undergoing renovation or a sufficient distance to contain the dust, whichever is greater. If a vertical containment system is employed, floor covering may stop at the vertical barrier, providing it is impermeable, extends from floor to ceiling, and is tightly sealed at floors, ceilings, and walls.

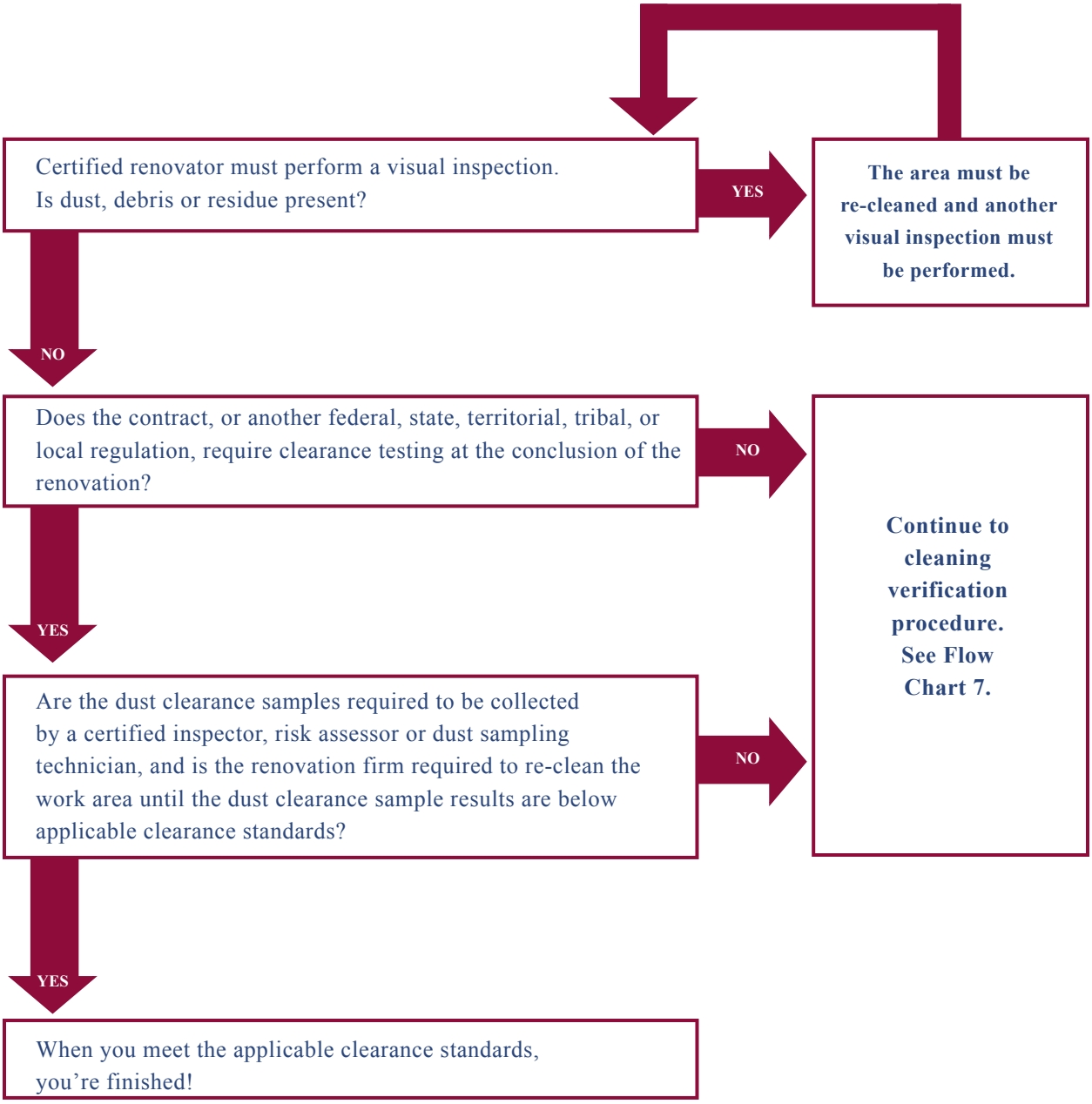
(E) Use precautions to ensure that all personnel, tools, and other items, including the exteriors of containers of waste, are free of dust and debris when leaving the work area.

(F) After the renovation has been completed, the firm must clean the work area until no dust, debris or residue remains. The firm must:

1. Collect all paint chips and debris, and seal it in a heavy-duty bag.
2. Remove and dispose of protective sheeting as waste.
3. Clean all objects and surfaces in the work area and within two feet of the work area in the following manner:
   a. Clean walls starting at the ceiling and working down to the floor by either vacuuming with a HEPA vacuum or wiping with a damp cloth.
   b. Thoroughly vacuum all remaining surfaces and objects in the work area, including furniture and fixtures, with a HEPA vacuum.
   c. Wipe all remaining surfaces and objects in the work area, except for carpeted or upholstered surfaces, with a damp cloth. Mop uncarpeted floors thoroughly using a mopping method that keeps the wash water separate from the rinse water, or using a wet mopping system.

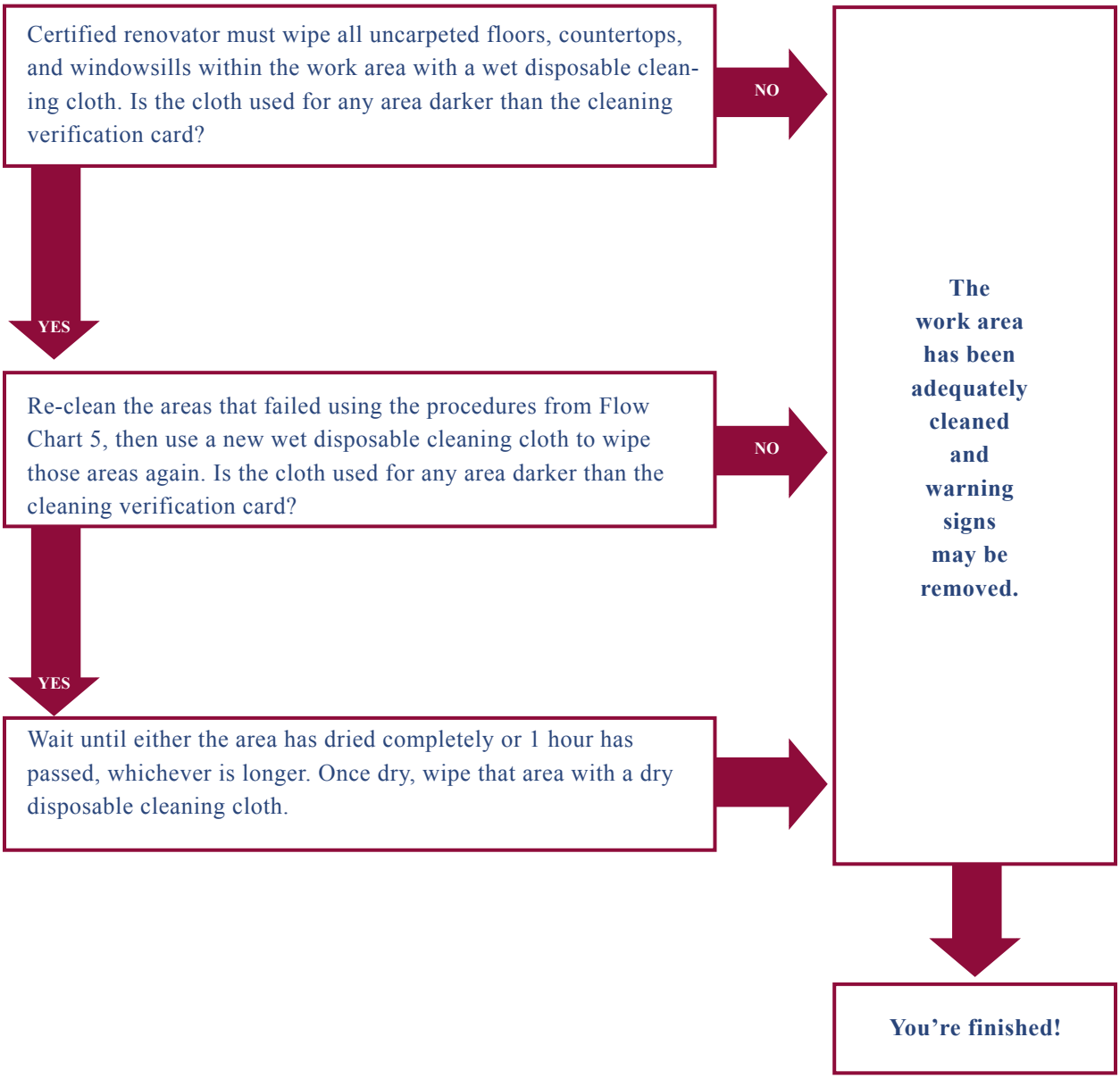
Cleaning verification is required to ensure the work area is adequately cleaned and ready for re-occupancy.
See Flow Chart 6 for instructions on performing cleaning verification for interior projects.

Interior Cleaning Verification: Visual Inspection and Optional Clearance Testing



Interior Cleaning Verification: Floors, Countertops, and Window Sills

Note: For areas greater than 40 square feet, separate the area into sections and use a new disposable cleaning cloth for each section.



Work Practice Requirements Specific to Exterior Renovations

The firm must:

(A) Close all doors and windows within 20 feet of the renovation.

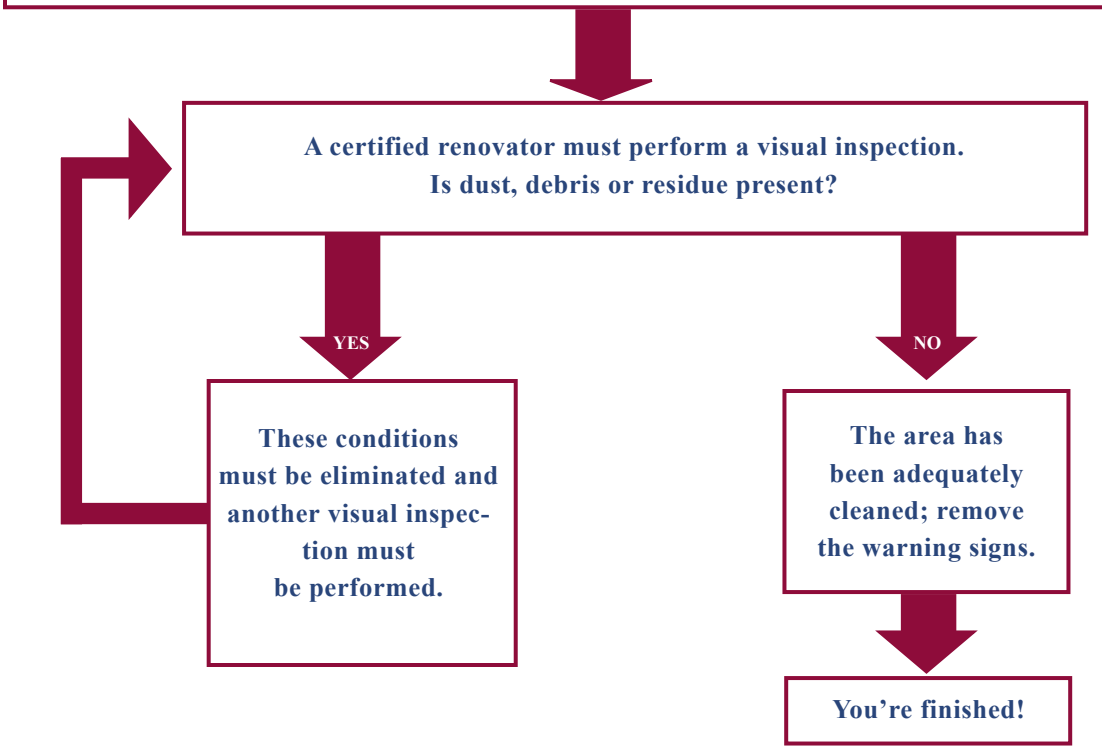
(B) Ensure that doors within the work area that will be used while the job is being performed are covered with plastic sheeting in a manner that allows workers to pass through while confining dust and debris.

(C) Cover the ground with plastic sheeting or other disposable impermeable material extending a minimum of 10 feet beyond the perimeter or a sufficient distance to collect falling paint debris, whichever is greater. If a property line prevents 10 feet of such ground covering, then erect vertical containment or equivalent extra precautions to prevent contamination of adjacent buildings and property.

(D) In situations such as where work areas are in close proximity to other buildings, windy conditions, etc., the renovation firm must take extra precautions in containing the work area, like vertical containment.

(E) After the renovation has been completed, the firm must clean the work area until no dust, debris or residue remains. The firm must:

1. Collect all paint chips and debris, and seal it in a heavy-duty bag.
2. Remove and dispose of protective sheeting as waste.
3. Waste transported from renovation activities must be contained to prevent release of dust and debris.



How Is My Compliance Determined, and What Happens if the Agency Discovers a Violation?

To maximize compliance, EPA implements a balanced program of compliance assistance, compliance incentives, and traditional law enforcement. EPA knows that small businesses that must comply with complicated new statutes or rules often want to do the right thing, but may lack the requisite knowledge, resources, or skills. Compliance assistance information and technical advice helps small businesses to understand and meet their environmental obligations. Compliance incentives, such as EPA's Small Business Policy, apply to businesses with 100 or fewer employees and encourage persons to voluntarily discover, disclose, and correct violations before they are identified by the government (more information about EPA's Small Business Policy is available at **www.epa.gov/compliance/incentives/smallbusiness/index.html**). EPA's enforcement program is aimed at protecting the public by targeting persons or entities who neither comply nor cooperate to address their legal obligations.

EPA uses a variety of methods to determine whether businesses are complying, including inspecting work sites, reviewing records and reports, and responding to citizen tips and complaints. Under TSCA, EPA (or a state, if this program has been delegated to it) may file an enforcement action against violators seeking penalties of up to $37,500 per violation, per day. The proposed penalty in a given case will depend on many factors, including the number, length, and severity of the violations, the economic benefit obtained by the violator, and its ability to pay. EPA has policies in place to ensure penalties are calculated fairly. These policies are available to the public. In addition, any company charged with a violation has the right to contest EPA's allegations and proposed penalty before an impartial judge or jury.

EPA encourages small businesses to work with the Agency to discover, disclose, and correct violations. The Agency has developed self-disclosure, small business, and small community policies to modify penalties for small and large entities that cooperate with EPA to address compliance problems. In addition, EPA has established compliance assistance centers to serve over one million small businesses (see Construction Industry Compliance Assistance Center for information regarding this rule at **www.cicacenter.org**). For more information on compliance assistance and other EPA programs for small businesses, please contact EPA's Small Business Ombudsman at 202-566-2075.

Frequent Questions

What is the legal status of this guide?

This guide was prepared pursuant to section 212 of SBREFA. EPA has tried to help explain in this guide what you must do to comply with the Toxic Substances Control Act (TSCA) and EPA's lead regulations. However, this guide has no legal effect and does not create any legal rights. Compliance with the procedures described in this guide does not establish compliance with the rule or establish a presumption or inference of compliance. The legal requirements that apply to renovation work are governed by EPA's 2008 Lead Rule, which controls if there is any inconsistency between the rule and the information in this guide.

Is painting considered renovation if no surface preparation activity occurs?

No. If the surface to be painted is not disturbed by sanding, scraping, or other activities that may cause dust, the work is not considered renovation and EPA's lead program requirements do not apply. However, painting projects that involve surface preparation that disturbs paint, such as sanding and scraping, would be covered.

What if I renovate my own home?

EPA's lead program rules apply only to renovations performed for compensation; therefore, if you work on your own home, the rules do not apply. EPA encourages homeowners to use lead-safe work practices, nonetheless, in order to protect themselves, their families, and the value of their homes.

Is a renovation performed by a landlord or employees of a property management firm considered a compensated renovation under EPA's lead program rules?

Yes. The receipt of rent payments or salaries derived from rent payments is considered compensation under EPA's lead program. Therefore, renovation activities performed by landlords or employees of landlords are covered.

Do I have to give out the lead pamphlet seven days prior to beginning renovation activities?

The 7-day advance delivery requirement applies only when you deliver the lead pamphlet by mail; otherwise, you may deliver the pamphlet anytime before the renovation begins so long as the renovation begins within 60 days of the date that the pamphlet is delivered. For example, if your renovation is to begin May 30, you may deliver the pamphlet in person anytime between April 1 and start of the project on May 30, or you may deliver the pamphlet by mail anytime between April 1 and May 23.

Tips for Easy Compliance

1. For your convenience the sample form on page 23 of this handbook is included in the *Renovate Right* lead pamphlet (see page 29 for information on how to get copies). Attach the form to the back of your customer renovation or repair contracts. The completed form can be filed along with your regular paperwork.
2. Plan ahead to obtain enough copies of the lead pamphlet (see page 29 for information on how to get copies of the pamphlet).

Where Can I Get More Information?

Further information is available from the National Lead Information Center (800-424-LEAD) and on the Internet at **www.epa.gov/lead**. Available resources include:

- Full text version of the Lead-Based Paint Renovation, Repair, and Painting Program regulation.
- Frequent Questions which provide more detailed information on the rule's requirements.
- A downloadable version of the lead pamphlet.



Why Is Lead Paint Dangerous?

Lead gets into the body when it is swallowed or inhaled. People, especially children, can swallow lead dust as they eat, play, and do other normal hand-to-mouth activities. People may also breathe in lead dust or fumes if they disturb lead-based paint. People who sand, scrape, burn, brush, blast or otherwise disturb lead-based paint risk unsafe exposure to lead.

Lead is especially dangerous to children under 6 years of age.

Lead can affect children's brains and developing nervous systems, causing:

- Reduced IQ and learning disabilities.
- Behavioral problems.

Even children who appear healthy can have dangerous levels of lead in their bodies.

Lead is also harmful to adults. In adults, low levels of lead can pose many dangers, including:

- High blood pressure and hypertension.
- Pregnant women exposed to lead can transfer lead to their fetus.



Other Resources

For additional information on how to protect yourself and your customers from lead paint hazards, visit **www.epa.gov/lead** or call the National Lead Information Center at 1-800-424-LEAD (5323). Available documents include:

- *The Lead-Safe Certified Guide to Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools*
- *Joint EPA-HUD Curriculum: Lead Safety for Remodeling, Repair, and Painting*
- *Steps to Lead Safe Renovation, Repair and Painting*
- *Fight Lead Poisoning with a Healthy Diet*
- *Protect Your Family From Lead in Your Home*
- *Lead in Your Home: A Parent's Reference Guide*



Key Terms

Certificate of Mailing — A written verification from the Postal Service that you mailed the lead pamphlet to an owner or a tenant. This is less expensive than certified mail, which is also acceptable for meeting the Lead-Based Paint Renovation, Repair, and Painting Program requirements. (**Note:** If using this delivery option, you must mail the pamphlet at least seven days prior to the start of renovation.)

Certified Inspector or Risk Assessor — An individual who has been trained and is certified by EPA or an authorized state or Indian Tribe to conduct lead-based paint inspections or risk assessments.

Child-occupied Facility — May include, but is not limited to, day care centers, pre-schools and kindergarten classrooms. Child-occupied facilities may be located in target housing or in public or commercial buildings. The regulation defines a "child-occupied facility" as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least three hours and the combined weekly visits last at least six hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may be located in target housing, or in public or commercial buildings. With respect to common areas in public or commercial buildings that contain child-occupied facilities, the child-occupied facility encompasses only those common areas that are routinely used by children under age 6, such as restrooms and cafeterias. Common areas that children under age 6 only pass through, such as hallways, stairways, and garages are not included. In addition, with respect to exteriors of public or commercial buildings that contain child-occupied facilities, the child-occupied facility encompasses only the exterior sides of the building that are immediately adjacent to the child-occupied facility or the common areas routinely used by children under age 6.

Cleaning Verification Card — a card developed and distributed by EPA for the purpose of determining, through comparison of wet and dry disposable cleaning cloths with the card, whether post-renovation cleaning has been properly completed.

Common Area — A portion of a building that is generally accessible to all residents or users. Common areas include (but are not limited to) hallways, stairways, laundry rooms, recreational rooms, playgrounds, community centers, and fenced areas. The term applies to both interiors and exteriors of the building.

Component — A specific design or structural element or fixture distinguished by its form, function, and location. A component can be located inside or outside the dwelling. Examples...

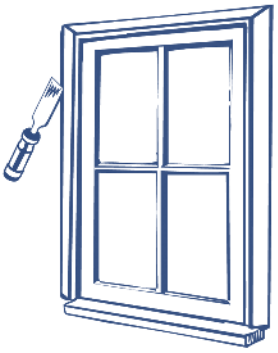
Interior

Ceilings
Crown molding
Walls
Doors and trim
Floors
Fireplaces
Radiators
Shelves
Stair treads
Windows and trim
Built-in cabinets
Beams
Bathroom vanities
Counter tops
Air conditioners



Exterior

Painted roofing
Chimneys
Flashing
Gutters and downspouts
Ceilings
Soffits
Doors and trim
Fences
Floors
Joists
Handrails
Window sills and sashes
Air conditioners



Confirmation of Receipt of Lead Hazard Information Pamphlet — A form that is signed by the owner or tenant of the housing confirming that they received a copy of the lead pamphlet before the renovation began. (See sample on page 23.)

Emergency Renovation — Unplanned renovation activities done in response to a sudden, unexpected event which, if not immediately attended to, presents a safety or public health hazard or threatens property with significant damage.

Examples

- *Renovation to repair damage from a tree that fell on a house.*
- *Renovation to repair a burst water pipe in an apartment complex.*
- *Interim controls performed in response to an elevated blood lead level in a resident child.*

Firm — A company, partnership, corporation, sole proprietorship or individual doing business, association, or other business entity; a Federal, State, Tribal, or local government agency; or a nonprofit organization.

General Contractor — One who contracts for the construction of an entire building or project, rather than for a portion of the work. The general contractor hires subcontractors (e.g. plumbing, electrical, etc.), coordinates all work, and is responsible for payment to subcontractors.

Housing for the Elderly — Retirement communities or similar types of housing specifically reserved for households of one or more persons 62 years of age or older at the time the unit is first occupied.

Interim Controls — Interim controls means a set of measures designed to temporarily reduce human exposure or likely exposure to lead-based paint hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs.

Lead Abatement — Work designed to permanently eliminate lead-based paint hazards. If you are hired to do lead-abatement work only, the Lead-Based Paint Renovation, Repair, and Painting Program does not apply. Abatement does not include renovation, remodeling, or other activities done to repair, restore, or redesign a given building — even if such renovation activities incidentally eliminate lead-based paint hazards. (***Note:*** Some states define this term differently than described above. Consult your state officials if you are not sure how "lead abatement" is defined in your state.)

Lead Pamphlet — The lead hazard information pamphlet for the purpose of pre-renovation education is *The LeadSafe Certified Guide to Renovate Right: Important Lead Hazard Information for Families, Child Care Facilities and Schools*, or an EPA-approved alternative pamphlet. (See page 29 for information on obtaining copies.)

Minor Repair and Maintenance — Activities that disrupt 6 square feet or less of painted surface per room for interior activities or 20 square feet or less of painted surface for exterior activities where none of the prohibited work practices is used and where the work does not involve window replacement or demolition of painted surface areas. When removing painted components, or portions of painted components, the entire surface area removed is the amount of painted surface disturbed. Jobs, other than emergency renovations, performed in the same room within the same 30 days must be considered the same job for the purpose of determining whether the job is a minor repair and maintenance activity.

Owner — Any person or entity that has legal title to housing, including individuals, partnerships, corporations, government agencies, Indian Tribes, and nonprofit organizations.

Painted Surface — A component surface covered in whole or in part with paint or other surface coatings.

Prohibited Practices — Work practices listed below are prohibited during a renovation:

- Open-flame burning or torching of painted surfaces;
- Use of machines that remove paint or other surface coatings through high speed operation such as sanding, grinding, power planing, needle gun, abrasive blasting, or sandblasting, unless such machines have shrouds or containment systems and are equipped with a HEPA vacuum attachment to collect dust and debris at the point of generation. Machines must be operated so that no visible dust or release of air occurs outside the shroud or containment system.
- Operating a heat gun on painted surfaces at temperatures above 1100 degrees Fahrenheit.

Record of Notification — A written statement documenting the steps taken to notify occupants of renovation activities in common areas of multi-family housing. (See page 25 for sample.)

Renovation — Modification of all or part of any existing structure that disturbs a painted surface, except for some specifically exempted activities (e.g., minor repair and maintenance). Includes:

- Removal/modification of painted surfaces, components, or structures
- Surface preparation activities (sanding/scraping/other activities that may create paint dust)
- Window replacement

Examples

1. Demolition of painted walls or ceilings
2. Replastering
3. Plumbing repairs or improvements
4. Any other activities which disturb painted surfaces

Renovation Notice — Notice to tenants of renovations in common areas of multi-family housing. (See sample form on page 25.) Notice must describe nature, location, and expected timing of renovation activity; and must explain how the lead pamphlet may be obtained free of charge.

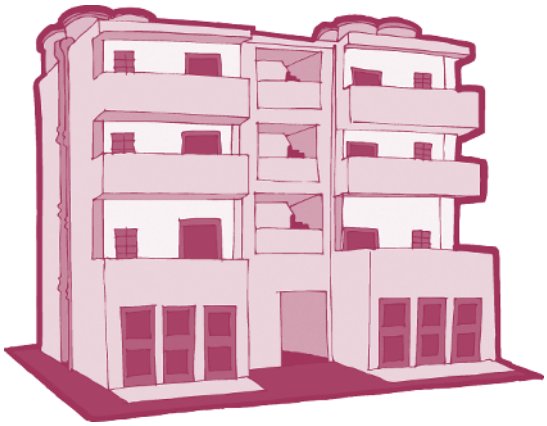


Renovator — A person who either performs or directs workers who perform renovation. A certified renovator is a renovator who has successfully completed a renovator course accredited by EPA or an EPA authorized State or Tribal program. (**Note:** Because the term "renovation" is defined broadly by the Lead-Based Paint Renovation, Repair, and Painting Program, many contractors who are not generally considered "renovators", as that term is commonly used, are considered to be "renovators" under the program and must follow the rule's requirements.)

Self-Certification of Delivery — An alternative method of documenting delivery of the lead hazard information pamphlet to a tenant. This method may be used whenever the tenant is unavailable or unwilling to sign a confirmation of receipt of lead pamphlet. (See sample form on page 23.) (**Note:** This method is not a permissible substitute for delivery of the lead pamphlet to an owner.)

Supplemental Renovation Notice — additional notification that is required when the scope, location, or timing of project changes.

Vertical Containment — A vertical barrier consisting of plastic sheeting or other impermeable material over scaffolding or a rigid frame, or an equivalent system of containing the work area. Vertical containment is required for some exterior renovations but it may be used on any renovation.



Zero-Bedroom Dwelling — Any residential dwelling where the living area is not separated from the sleeping area. This term includes efficiency and studio apartments, dormitory housing, and military barracks.

Sample Pre-Renovation Form

This sample form may be used by firms to document compliance with the requirements of the Federal Lead-Based Paint Renovation, Repair, and Painting Program.

Occupant Confirmation

Pamphlet Receipt

___ I have received a copy of the lead hazard information pamphlet informing me of the potential risk of the lead hazard exposure from renovation activity to be performed in my dwelling unit. I received this pamphlet before the work began.

Printed Name of Owner-occupant

Signature of Owner-occupant Signature Date

Renovator's Self Certification Option (for tenant-occupied dwellings only)
Instructions to Renovator: If the lead hazard information pamphlet was delivered but a tenant signature was not obtainable, you may check the appropriate box below.

___ **Declined** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet to the rental dwelling unit listed below at the date and time indicated and that the occupant declined to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit with the occupant.

___ **Unavailable for signature** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet to the rental dwelling unit listed below and that the occupant was unavailable to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit by sliding it under the door or by (fill in how pamphlet was left).

Printed Name of Person Certifying Delivery Attempted Delivery Date

Signature of Person Certifying Lead Pamphlet Delivery

Unit Address

Note Regarding Mailing Option — As an alternative to delivery in person, you may mail the lead hazard information pamphlet to the owner and/or tenant. Pamphlet must be mailed at least 7 days before renovation. Mailing must be documented by a certificate of mailing from the post office.


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Sample Forms (continued)

Renovation Notice — For use in notifying tenants of renovations in common areas of multi-family housing.

The following renovation activities will take place in the following locations:

_____
Activity *(e.g., sanding, window replacement)*

_____
Location *(e.g., lobby, recreation center)*

The expected starting date is_____and the expected ending date is_____.
Because this is an older building built before 1978, some of the paint disturbed during the renovation may contain lead. You may obtain a copy of the pamphlet, *Renovate Right*, by telephoning me at_____. Please leave a message and be sure to include your name, phone number and address. I will either mail you a pamphlet or slide one under your door.

_____ _____
Date Printed name of renovator

_____
Signature of renovator

Record of Tenant Notification Procedures

Project Address _____

Street (apt. #) _____

City_____ State _____ Zip Code _____

_____ _____
Owner of multi-family housing Number of dwelling units

_____
Method of delivering notice forms *(e.g. delivery to units, delivery to mailboxes of units)*

_____
Name of person delivering notices

_____ _____
Signature of person delivering notices Date of Delivery


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Sample Renovation Recordkeeping Checklist

Name of Firm: _____

Date and Location of Renovation: _____

Brief Description of Renovation: _____

Name of Assigned Renovator: _____

Name(s) of Trained Worker(s), if used: _____

Name of Dust Sampling Technician,
Inspector, or Risk Assessor, if used: _____

___ Copies of renovator and dust sampling technician qualifications (training certificates, certifications) on file.

___ Certified renovator provided training to workers on (check all that apply):

- ___ Posting warning signs
- ___ Setting up plastic containment barriers
- ___ Maintaining containment
- ___ Avoiding spread of dust to adjacent areas
- ___ Waste handling
- ___ Post-renovation cleaning
- ___ Test kit or test results from an EPA-recognized laboratory on collected paint chip sample, used by certified renovator to determine whether lead was present on components affected by renovation (identify method used, type of test kit used (if applicable), laboratory used to conduct paint chip analysis, describe sampling locations and results):

_____

___ Warning signs posted at entrance to work area.

___ Work area contained to prevent spread of dust and debris

- ___ All objects in the work area removed or covered (interiors)
- ___ HVAC ducts in the work area closed and covered (interiors)
- ___ Windows in the work area closed (interiors)
- ___ Windows in and within 20 feet of the work area closed (exteriors)
- ___ Doors in the work area closed and sealed (interiors)
- ___ Doors in and within 20 feet of the work area closed and sealed (exteriors)
- ___ Doors that must be used in the work area covered to allow passage but prevent spread of dust
- ___ Floors in the work area covered with taped-down plastic (interiors)
- ___ Ground covered by plastic extending 10 feet from work area—plastic anchored to building and weighed down by heavy objects (exteriors)
- ___ Vertical containment installed if property line prevents 10 feet of ground covering, or if necessary to prevent migration of dust and debris to adjacent property (exteriors)

___ Waste contained on-site and while being transported off-site.

___ Work site properly cleaned after renovation

- ___ All chips and debris picked up, protective sheeting misted, folded dirty side inward, and taped for removal
- ___ Work area surfaces and objects cleaned using HEPA vacuum and/or wet cloths or mops (interiors)

___ Certified renovator performed post-renovation cleaning verification (describe results, including the number of wet and dry cloths used): _____

_____

- ___ If dust clearance testing was performed instead, attach a copy of report

___ I certify under penalty of law that the above information is true and complete.

_____

Name and title Date


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Where Can I Get Copies of the Lead Pamphlet?

For single copies, in Spanish or English, of *The Lead-Safe Certified Guide to Renovate Right: Important Lead Hazard Information for Families, Child Care Facilities and Schools* (EPA-740-K-10-001), call the National Lead Information Center (NLIC) at 1-800-424-LEAD. For any orders, be sure to use the appropriate stock reference number listed above.

There are four ways to get multiple copies:

1. Obtain downloadable copies (PDF) from the EPA website at **www.epa.gov/lead/pubs/brochure.htm**.

2. Call the Government Printing Office (GPO) Order Desk at (202) 512-1800.

3. Order from the GPO Bookstore at **http://bookstore.gpo.gov/environment**.

4. Request copies in writing from:
   U.S. GPO
   P.O. Box 979050
   St. Louis, MO 63197-9000



The pamphlet may be photocopied for distribution as long as the text and graphics are readable.

Paperwork Reduction Act Notice: The incremental public burden for the collection of information contained in the Lead Renovation, Painting and Repair Program, which are approved under OMB Control No. 2070-0155 and identified under EPA ICR No. 1715, is estimated to average approximately 54 hours per year for training providers. For firms engaged in regulated renovation, repair, and painting activities, the average incremental burden is estimated to be about 6.5 hours per year. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, may be sent to: Director, Collection Strategies Division, Office of Environmental Information, U.S. Environmental Protection Agency (Mail Code 2822T), 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20460. Include the OMB number identified above in any correspondence. Do not send any completed form(s) to this address. The actual information or form(s) should be submitted in accordance with the instructions accompanying the form(s), or as specified in the corresponding regulations.

NOTICE

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www.epa.gov/lead



APPENDIX G

PEST CONTROL RESOURCES

Powderpost Beetles

updated: 4/06

www.LivingWithBugs.com

Powderpost beetles are the most destructive *beetle* pests of seasoned wood. Other important wood-destroying insects are carpenter ants and termites.

The common name "powderpost" reflects the fact that over time these beetles can reduce sound wood to very fine powder or pellets. Adult beetles are small (1/8"- 1/4"), dark brown to black and cylindrical (Fig. 1). Most of their life, however, is spent as larvae (grubs) tunneling in wood. When development is complete, the mature adult beetle chews its way out of the wood, leaving behind a small, circular hole (Fig. 2).



Figure 1. Lyctid powderpost beetle (1/8"). Original photo by Ken Gray.

Larvae feed on the starch packed inside wood cells, unlike termites that feed on the wood itself and carpenter ants that only excavate in wood. In the process of mining for starch, larvae destroy the wood's structure making it weak.

Powderpost beetles infest both softwoods like pine and fir, and hardwoods like oak and maple. Hardwood flooring and cabinets can be damaged as well as structural beams and moldings made of softwood.

Infestations often begin after wood is cut into lumber, especially if it is not stored properly. In hardwoods the damage generally only affects the finished wood's appearance while damage to softwoods can be more extensive and result in structural weakness or even complete loss.



Figure 2. Anobiid powderpost beetle emergence holes in softwood.

Life Cycle. The complete life cycle (egg - adult - egg) may be as short as several months or as long as many years. It depends on the species, the nutritional quality of the infested wood and overall temperature and moisture conditions. One family of powderpost beetles, the anobiids, prefer damp wood and is more common in coastal areas or in situations where wood is allowed to remain damp. Another group, the lyctids, prefers seasoned hardwood (like furniture) and may require many years to complete development. Emergence holes can appear suddenly on old furniture. However, more commonly, emergence holes begin

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showing up in trim wood around cabinets and along baseboards one to several years after manufacture. Male and female beetles mate soon after emergence and eggs are laid on wood surfaces. Hatching larvae chew into the wood to start the cycle over.



Figure 3. Lyctid powderpost beetle emergence hole in oak.

Control Options. Kiln drying kills all stages of powderpost beetles. However, kiln drying alone will not prevent wood from becoming infested if it is exposed to an active infestation. Once wood becomes infested control options are limited to treating the larvae inside burrows (difficult) or preventing new infestions by emerging adults (easier but slower).

Treatment of larvae inside burrows is best done with boric acid. Tim-bor and Bora-Care (Nisus Corporation, www.nisuscorp.com) contain this active ingredient. Both penetrate unsealed surfaces (or can be injected) and can be painted or otherwise finished when dry. These products can also be used to prevent infestations of powderpost beetles, termites, carpenter ants and other wood-infesting insects, and rot fungi.

New infestations can be prevented by painting or sealing all wood surfaces including surfaces that are not visible. Various highly toxic wood preservatives are available for outdoor wood or wood that must be in contact with soil. While not generally recommended for homeowner application, wood preservatives may be necessary in some situations. The USDA Forest Products Laboratory (www.fpl.fs.fed.us) maintains an excellent site dedicated to wood preservation technology.

You may be tempted to "tent and fumigate". While effective, if done correctly, at eliminating active infestations, I don't recommend fumigation for residential houses. Fumigation is very expensive and provides no long-term residual control.

New and existing wood can be treated with a residual insecticide like boric acid. Residual treatments will prevent new infestation by emerging beetles. Also, you must solve any existing moisture problems before attempting any other treatment. Finally, I strongly recommend yearly inspections for powderpost beetles, carpenter ants and termites. See our article about inspections.


Figure 4. Anobiid powderpost beetle damage in softwood. Note that damage is absent in heartwood.

Additional information can be found at www.LivingWithBugs.com.

www.LivingWithBugs.com

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BOHART Museum of Entomology University of California, Davis

INFORMATION

No. 046

Powder Post Beetles

The name powderpost beetle can be used to refer to several families of beetles (Anobiidae and Bostrichidae). A subfamily of bostrichids, Lyctinae or lyctids, are the only true powderpost beetles, so named because their tunnels and galleries are filled with very fine powdery frass (droppings).

These beetles can be serious pests of hardwoods, particularly in the southern U.S. Lyctids normally infest seasoned wood less than 5 years old. There are 11 species in North America, which all have very similar natural histories. Many lyctid species are widespread worldwide. They are readily transported in wood products, such as furniture, timbers, crates, picture frames, baskets and hardwood flooring. Adults are found primarily during the warm months.

Powder post beetles have very different larval and adult stages. The larvae are pale, yellowish to white, C-shaped grubs. Adults are brown to blackish elongate beetles, ranging in length from 2-7.5 mm. The adult antenna has a distinctive two-segmented club.

These beetles are largely invisible while feeding. It is not until the adults begin to emerge, leaving small circular exit holes (see below) behind that they are noticed. The holes are about 1 mm in diameter. Adults are nocturnal and are attracted to lights at night. They can live up to 3 months. As soon as the adults emerge they mate and the females began laying eggs. In a week they can lay between 15 and 50 eggs.

Development is temperature dependent, proceeding more quickly at higher temperatures. Eggs will hatch in 1-3 weeks after being laid. The larvae will tunnel just to the surface of the wood without breaking out to the surface. This can lead to heavily infested wood having a paper-like surface. When the larva is fully developed they burrow close to the surface and create a pupal chamber to pupate. The pupal stage lasts several weeks to one month depending on temperature.

Lyctid beetles require a certain level of wood moisture. They can survive in wood with a moisture content between 6 and 30% but greatest survival is with moisture levels of 10-20%. Wood starch content needs to be at least 3% for females to oviposit. Evidently, powder post beetles feed on starch in the wood, but since they do not produce cellulase or lignase enzymes they cannot digest the structural components of the wood. As a result their activity is restricted to sapwood or woods impregnated with some kind of carbohydrate.

There are a number of ways of handling infestations, depending on the situation and the severity of the infestation. Wood can be treated by varnishing, painting, sealing or the use of wax. This treatment will prevent re-infestation however it will not kill beetles already present in the wood. It is important to also fill emergence holes as they occur to prevent re-infestation.

Other measures include replacing infested wood, freezing or chemical treatments. If it is determined that the infestation is limited to a single piece of wood, removal and replacement are indicated. If a small article is infested then freezing at 0°F for at least 72 hrs or heating to 120-130 °F for 5 hrs or so should be effective. However, eggs are very cold tolerant.

There are two forms of chemical treatment, surface and fumigation. Fumigation is considered to be the most effective but it does not prevent re-infestation. Surface treatments take a long time, sometimes years, but may be more effective in the long term.





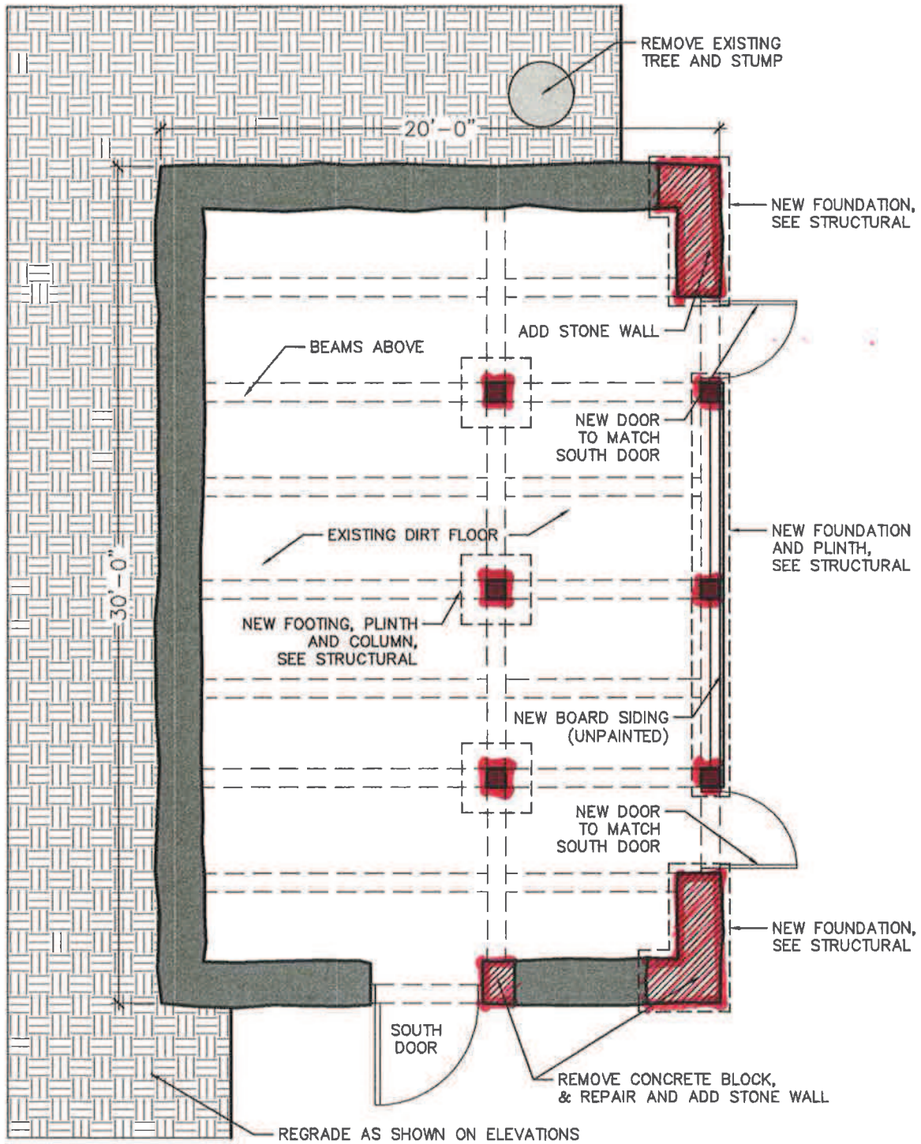
Adult *Lyctus planicollis*, drawing modified from Gerberg 1957. Wood damage, photo by USDA Forest Service, Wood Products Insect Lab Archives, USDA Forest Service, www.forestryimages.org

Bohart Museum of Entomology, Department of Entomology & Nematology, University of California, Davis, CA 95616
phone: (530) 752-0493; Internet: bohart@ucdavis.edu



APPENDIX H

NORTH BARN
CONSTRUCTION DRAWINGS



1 / A1.a LOWER LEVEL
3/16"=1'-0"

ARCHITECTURAL NOTES FOR RECONSTRUCTION:

The North Barn is part of the Andrew Peterson Farm that was listed on the National Registry of Historic Places in 1979. The North Barn dates to 1882 and was constructed as a two-story plus loft bank barn of had hewn wood framing and fieldstone foundation wall. The hinges and latches were hand wrought. It was sheathed in vertical board and batten siding. Originally hogs were housed on the lower level and the main level and loft had many different uses over the years.

The barn was heavily damaged as a result of building collapse and has been temporarily stabilized and protected for permanent restoration. The existing South Barn that is very similar can be used as an example of the construction type, windows, doors, and hand wrought hinges and latches for the North Barn. The North Barn is currently privately owned, but the reconstruction work will be accomplished through and Owner/Contractor Agreement between the Contractor and the Carver County Historical Society. Wendy Biorn is the Executive Director.

The North Barn reconstruction work should follow the Secretary of the Interior's Standards for the Preservation of Historic Barns (see Preservation Brief) includes restoring the structural integrity of building reusing many of the original structural timbers and siding as much as possible, including:

- Reassembling existing hand hewn wood beams and columns (see structural notes) to match original and as shown on the drawings.
- Replacing rotted board and batten siding to match the original and as shown on the drawings and paint exterior red with white trim to match original.
- Replace windows to match the original.
- Removing concrete block foundation wall and replacing with fieldstone to match original and as shown on the drawings. Repair fieldstone foundation wall cracks with tuck pointing.
- Reuse existing wood roof framing and sheathing to reconstruct roof. Provide new as required as shown on the drawings.
- New cedar shingles and metal ridge cap on the roof.
- Repair existing doors with hand wrought hinges and hardware, and provide new to match as shown on the drawings.
- Securely nail existing and new floor boards to support beams on Main level and Loft level.

This work will restore the building to its original use. It does not include any additional structural work for a public use which is unknown at this point in time. That analysis and work will be part of a later phase.

See Structural Notes for Reconstruction on Sheet S5

PROJECT NO. 795

RESTORATION OF HISTORIC NORTH BARN, ANDREW PETERSEN FARM, FOR CARVER COUNTY HISTORICAL SOCIETY,
555 W 1ST STREET
WACONIA, MN 55387

thorbeck
ARCHITECTS
2121 deleware avenue
mendota heights, mn 55118
tel: 651.756.7073
fax: 651.756.7074

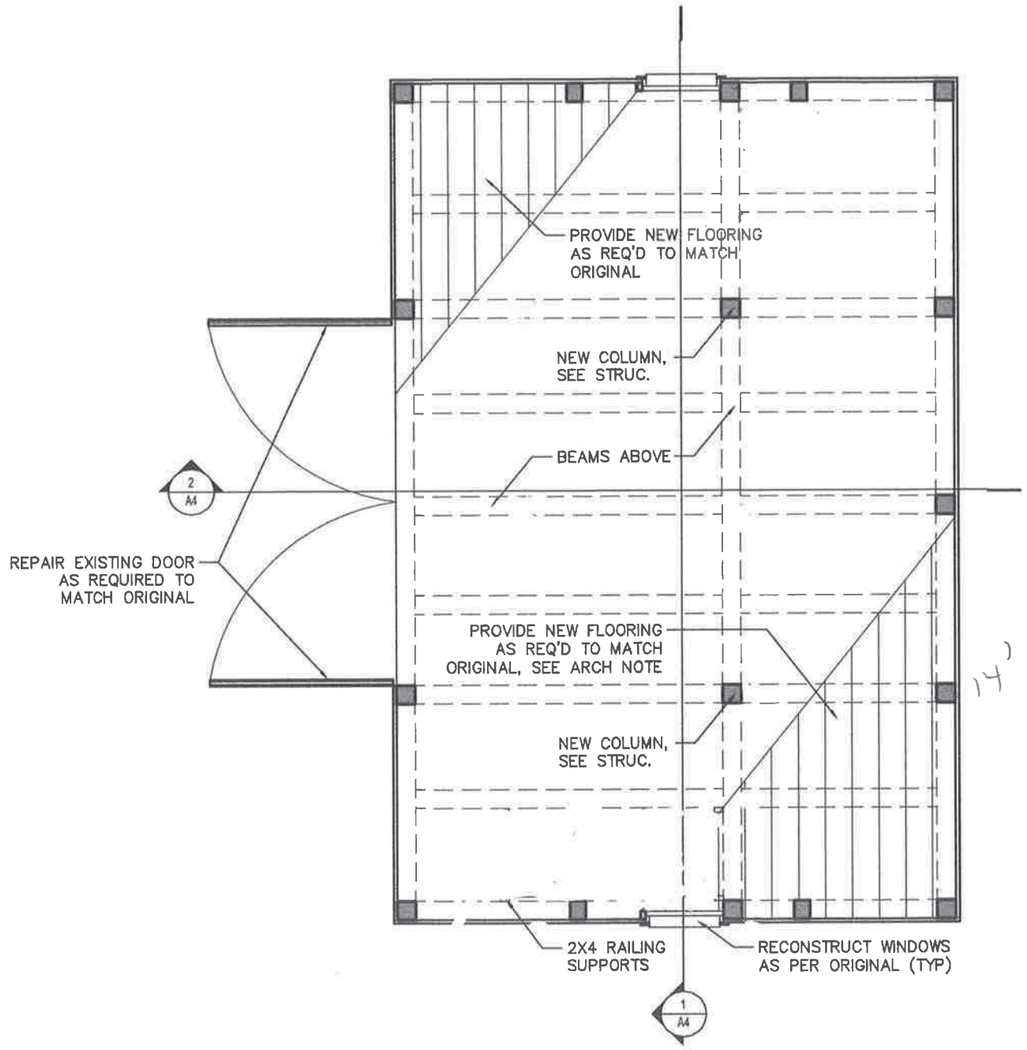
Mattson Macdonald Young
structural engineers

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SCALE 3/16"=1-0"
DATE 6/28/2011

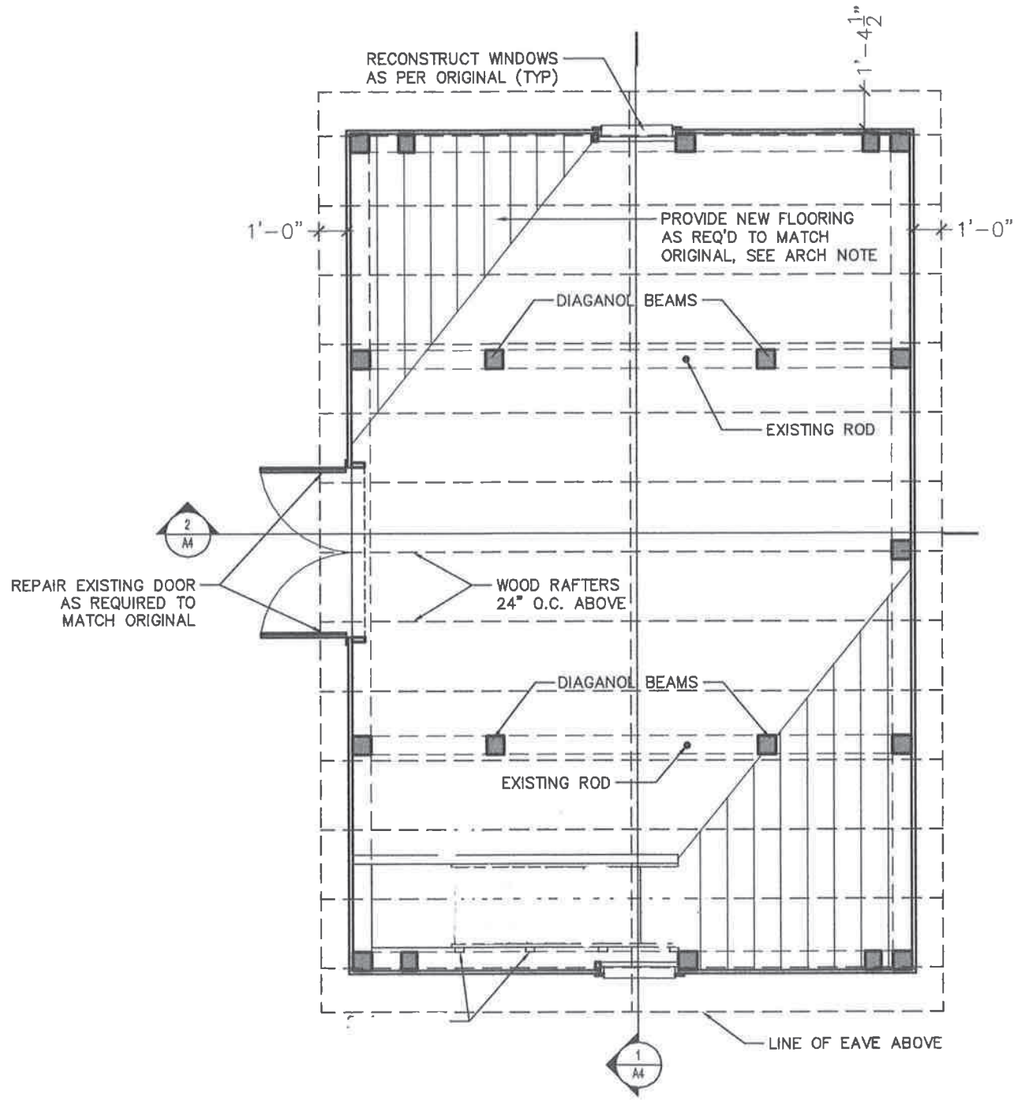
NOTES

SHEET TITLE
LOWER LEVEL FLOOR PLAN

SHEET NO.
A1.a



1 A1.b MAIN LEVEL
3/16"=1'-0"



2 A1.b LOFT LEVEL
3/16"=1'-0"

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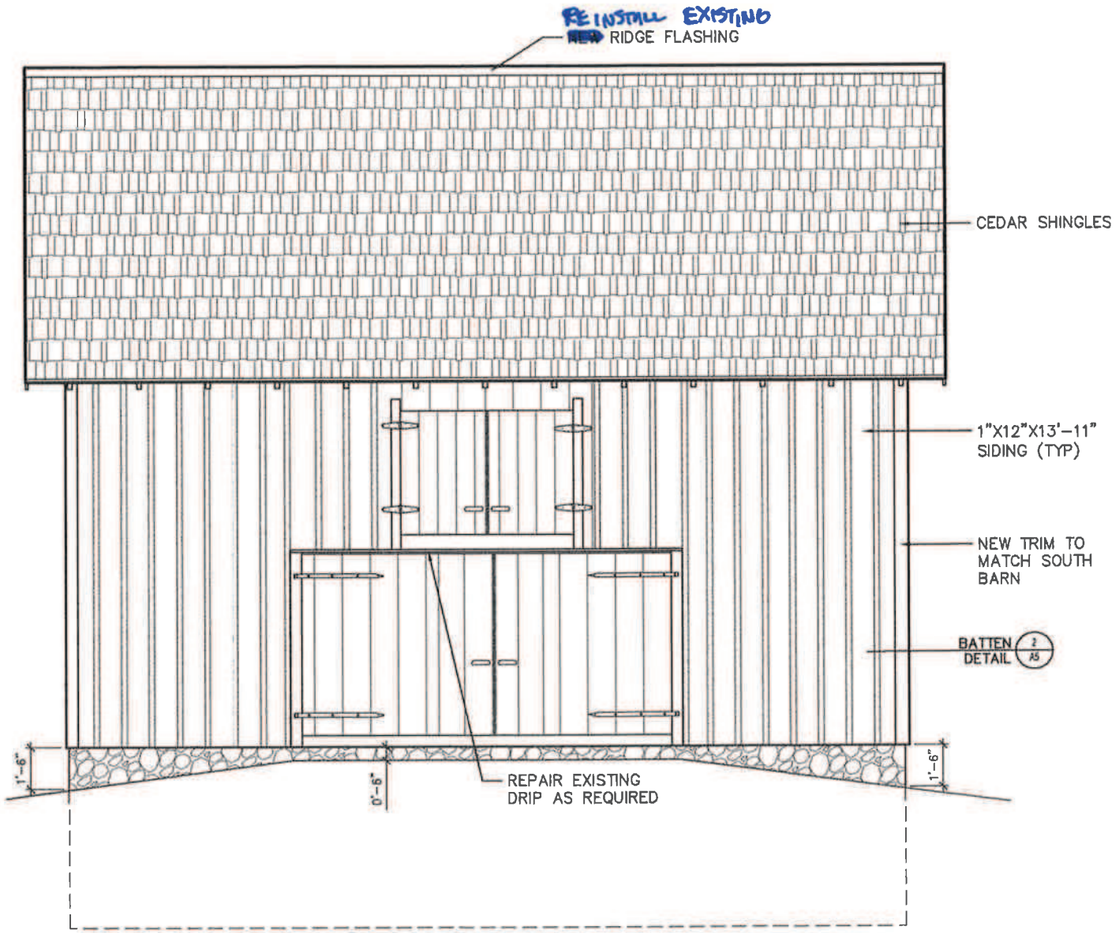
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DATE 6/28/2011

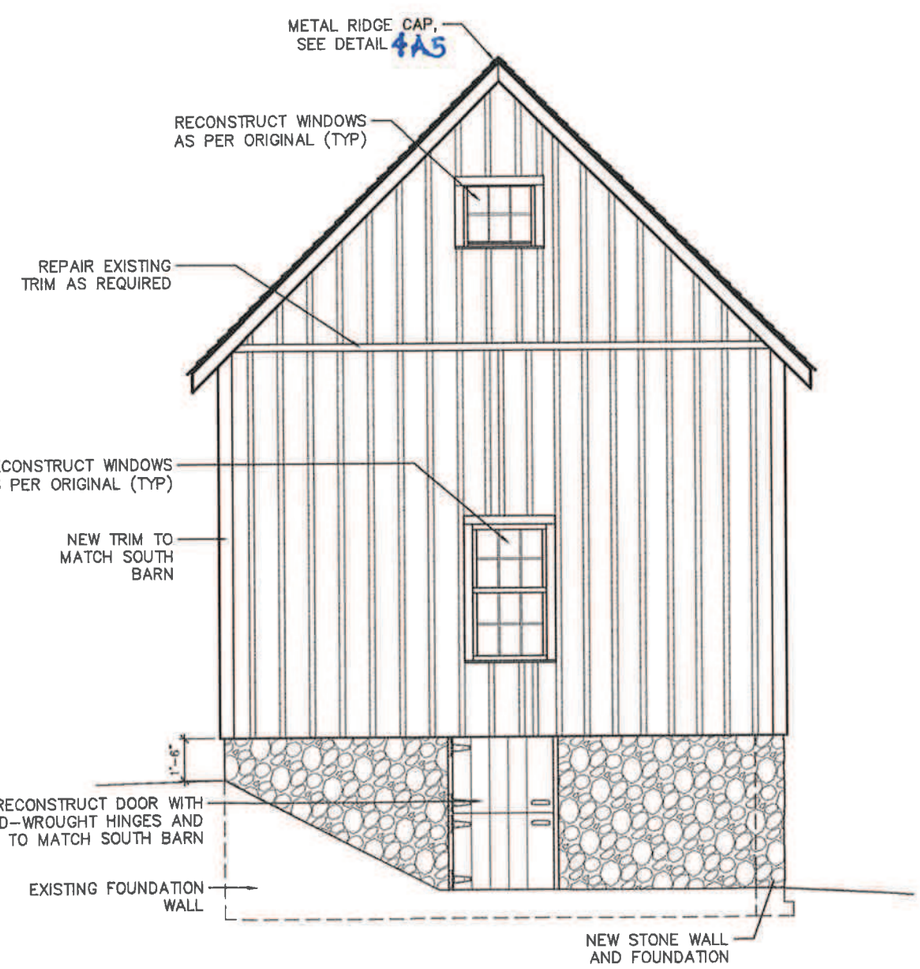
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SHEET TITLE
FLOOR PLANS

SHEET NO.
A1.b



1/A2 WEST ELEVATION
3/16"=1'0"



2/A2 SOUTH ELEVATION
3/16"=1'0"

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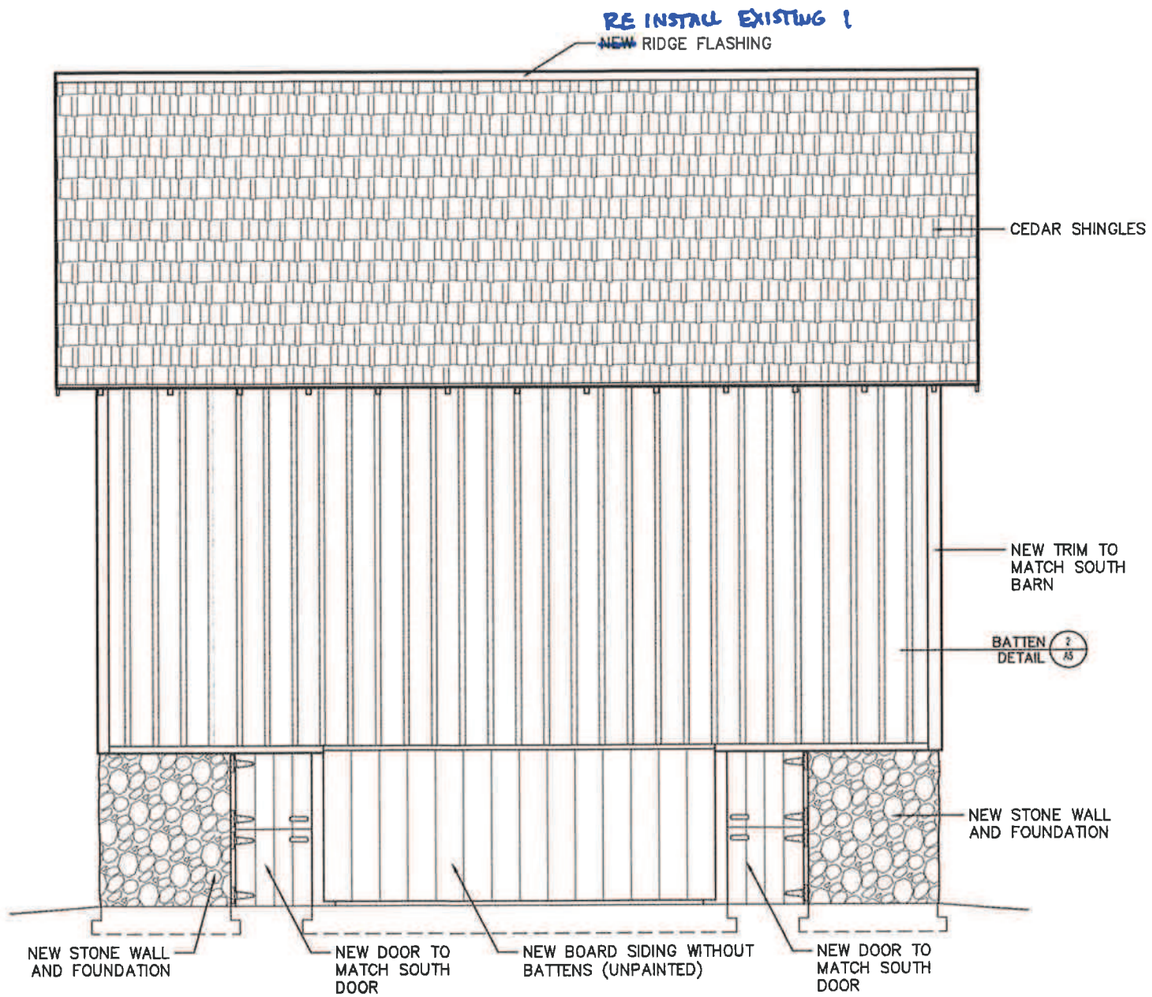
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DATE 6/28/2011

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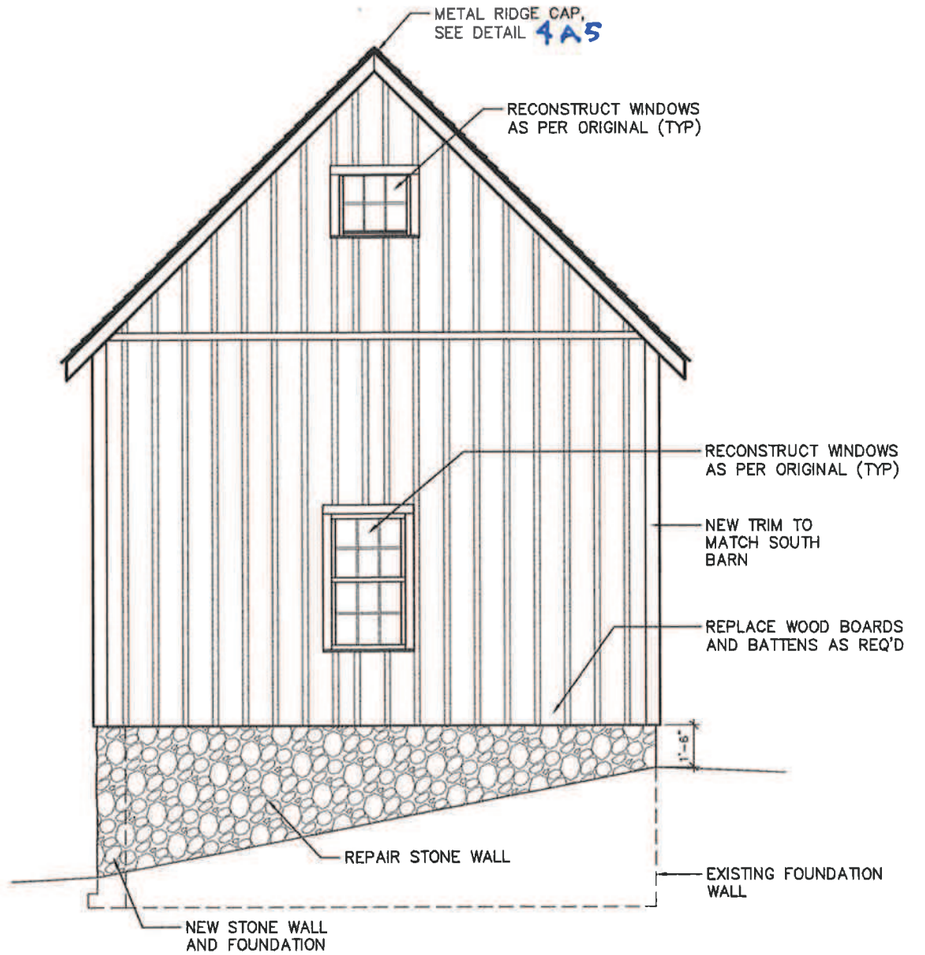
SHEET TITLE
ELEVATIONS

SHEET NO.
A2



1/A3 EAST ELEVATION

3/16"=1'0"



2/A3 NORTH ELEVATION

3/16"=1'0"

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structural engineers

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CHECKED DT

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DATE 6/28/2011

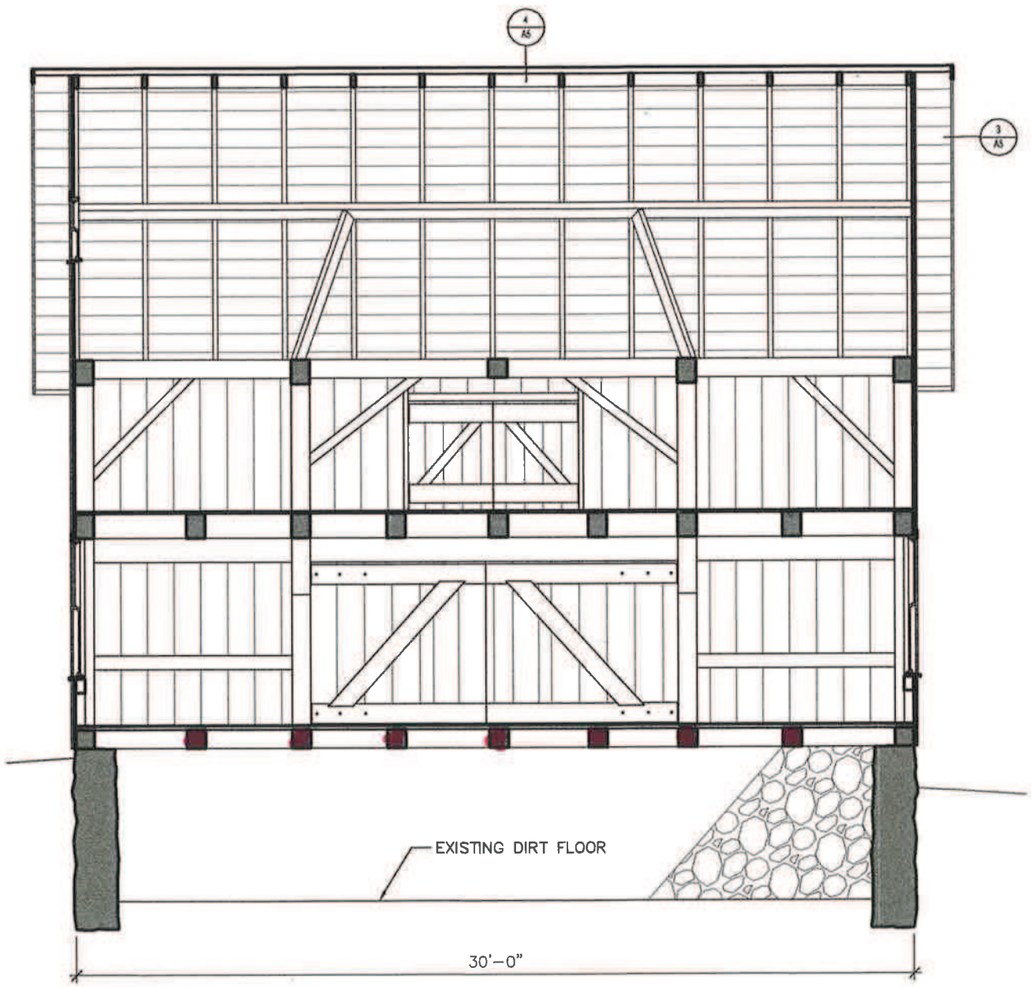
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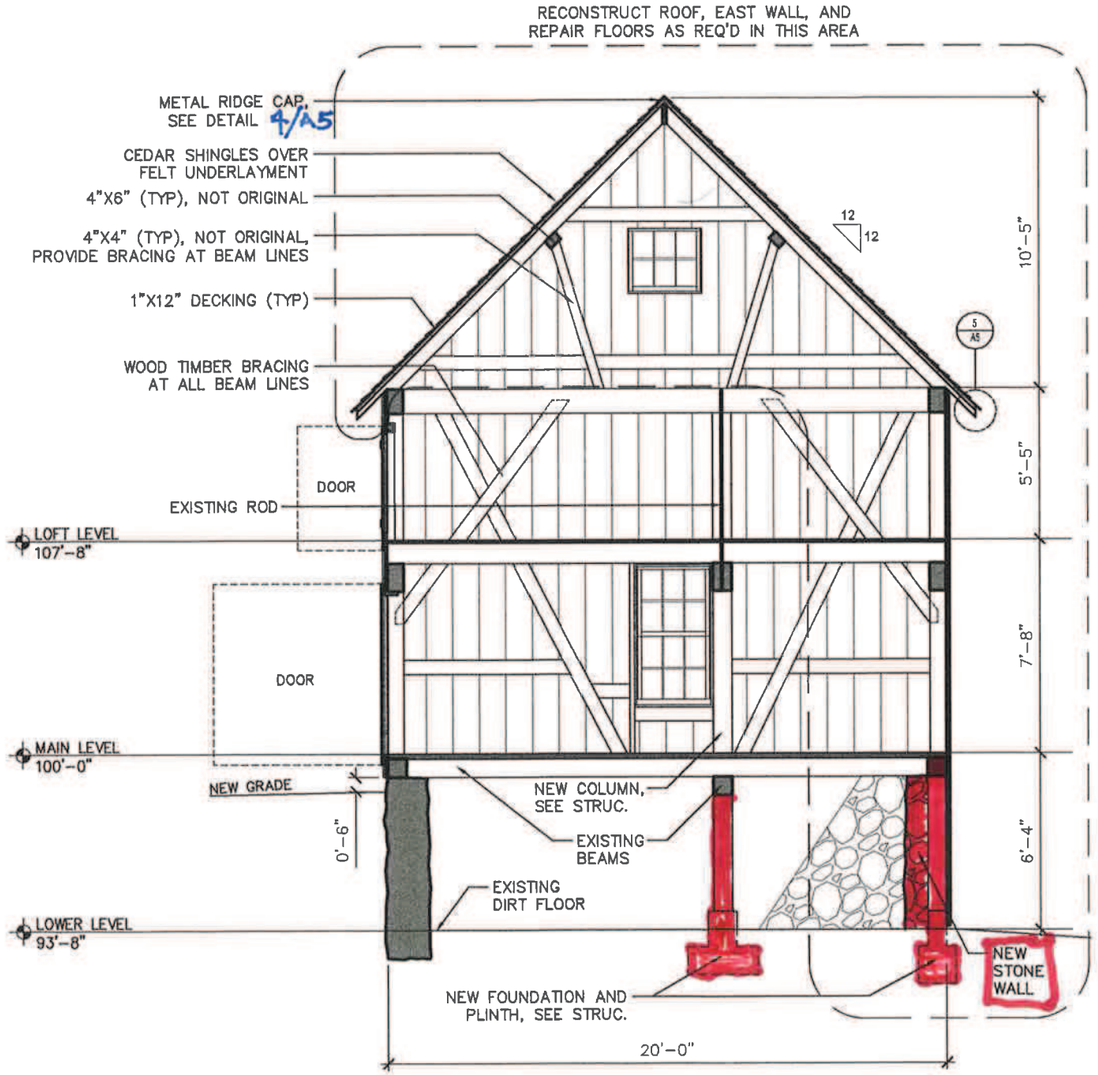
ELEVATIONS

SHEET NO.

A3



1/A4 SECTION A-A
3/16"=1'-0"



2/A4 SECTION B-B
3/16"=1'-0"

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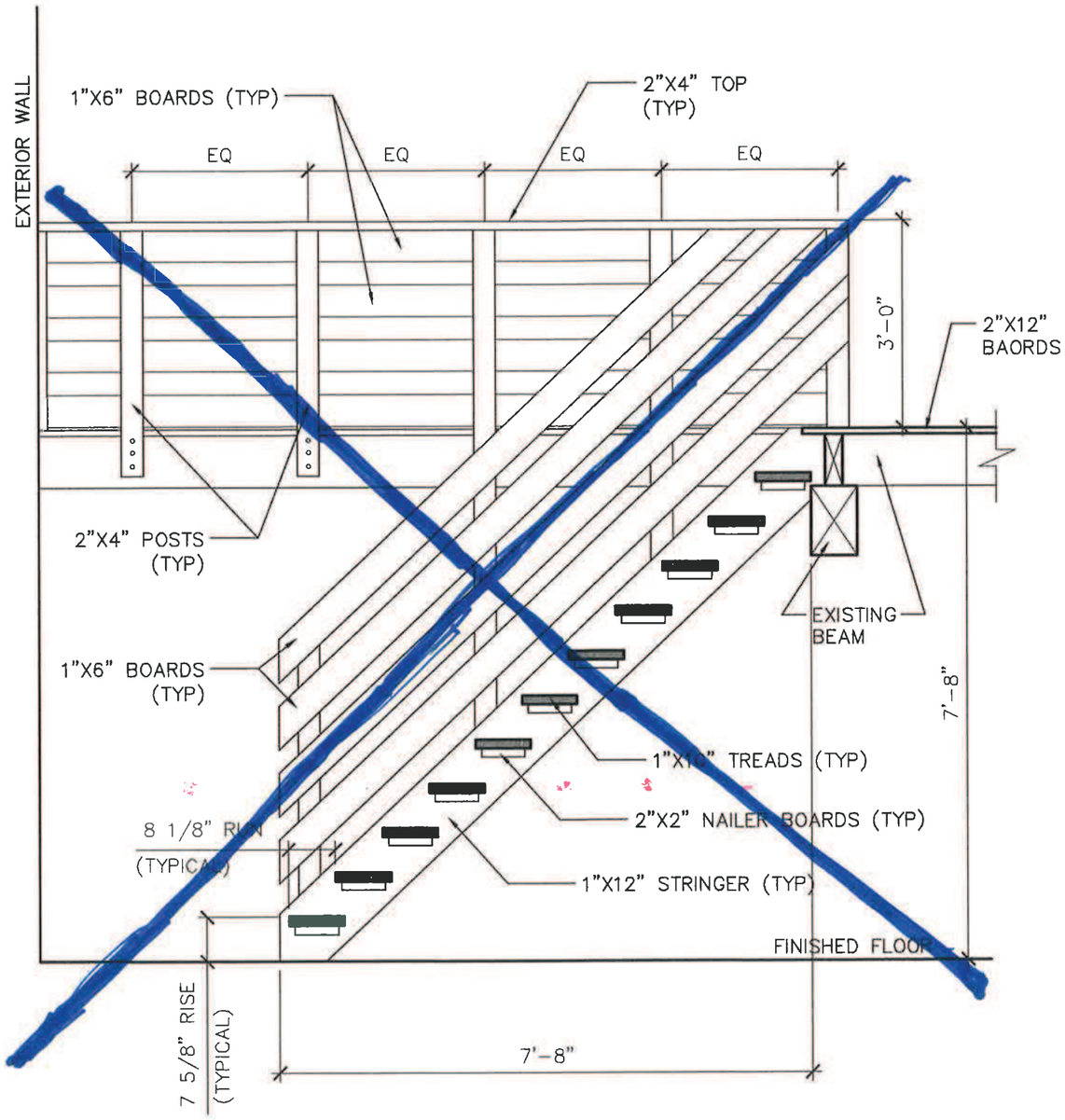
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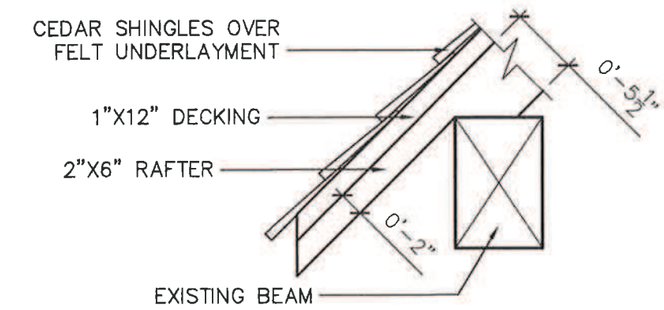
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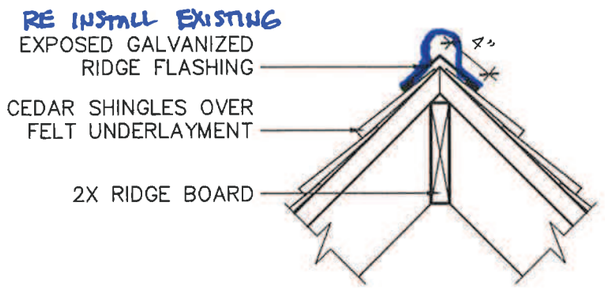
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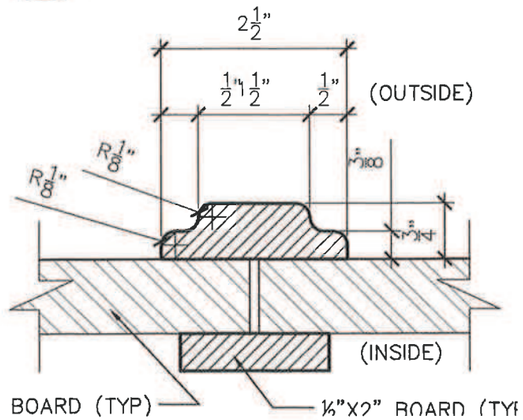
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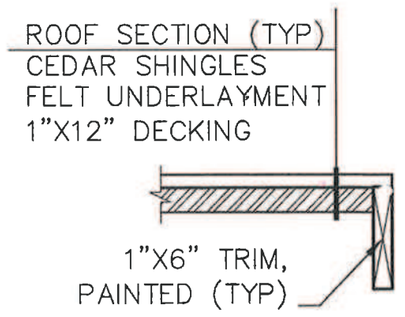
5/A5 EAVE DETAIL
1"=1'-0"



4/A5 RIDGE DETAIL
1"=1'-0"



2/A5 BATTEN DETAIL
6"=1'-0"



3/A5 EDGE DETAIL
1 1/2"=1'-0"

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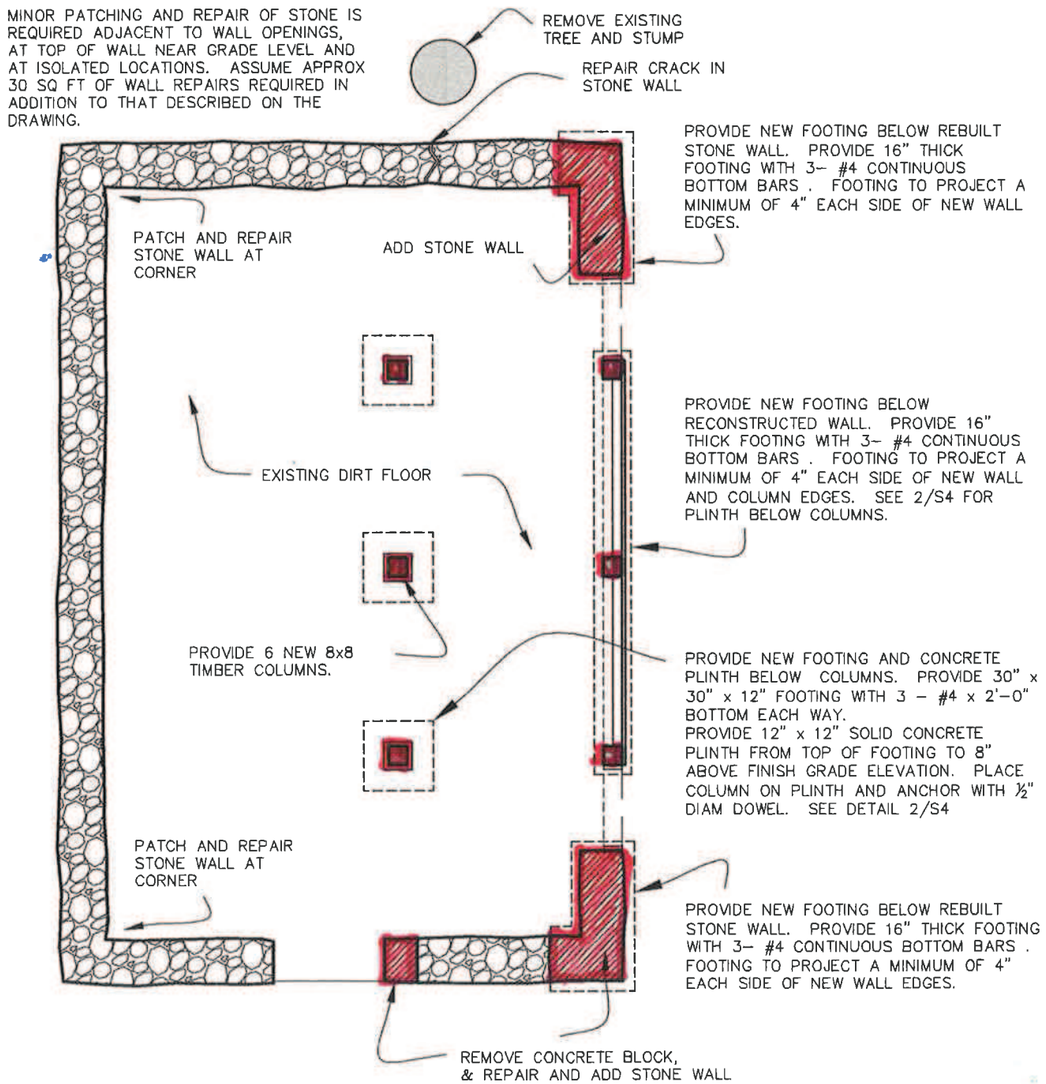
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SCALE AS SHOWN
DATE 6/28/2011

NOTES

SHEET TITLE
DETAILS

SHEET NO.
A5



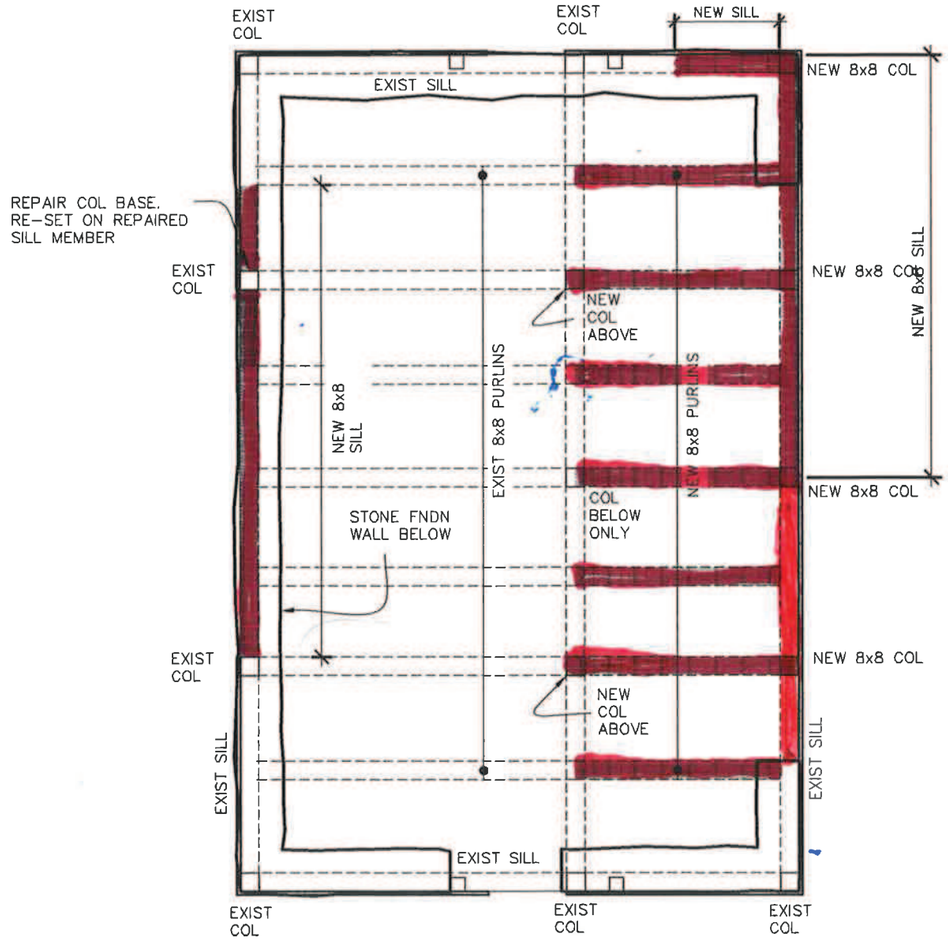
1/S1 LOWER LEVEL – FOUNDATION

3/16" = 1'–0"

MEMBERS SHOWN THUS ARE TO BE RE–ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

MEMBERS SHOWN ARE WORK COMPLETED

NORTH



2/S1 FIRST LEVEL FRAMING

3/16" = 1'–0"

MEMBERS SHOWN THUS ARE TO BE RE–ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

MEMBERS SHOWN ARE WORK COMPLETED

PROJECT NO. 795

RESTORATION OF HISTORIC NORTH BARN, ANDREW PETERSEN FARM, FOR CARVER COUNTY HISTORICAL SOCIETY,
555 W 1ST STREET
WACONIA, MN 55387

thorbeck ARCHITECTS
2121 deleware avenue
mendota heights, mn 55118
tel: 651.756.7073
fax: 651.756.7074

Mattson Macdonald Young structural engineers

DRAWN DHM

CHECKED

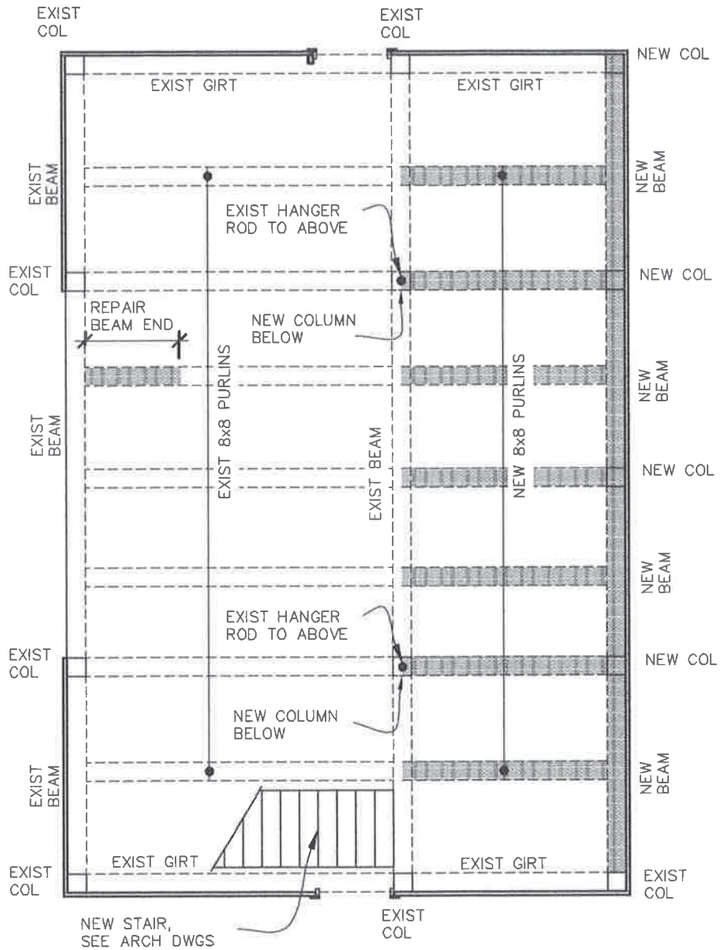
SCALE 3/16"=1-0"

DATE 6/28/2011

NOTES

SHEET TITLE
FOUNDATION PLAN AND FIRST LEVEL FRAMING

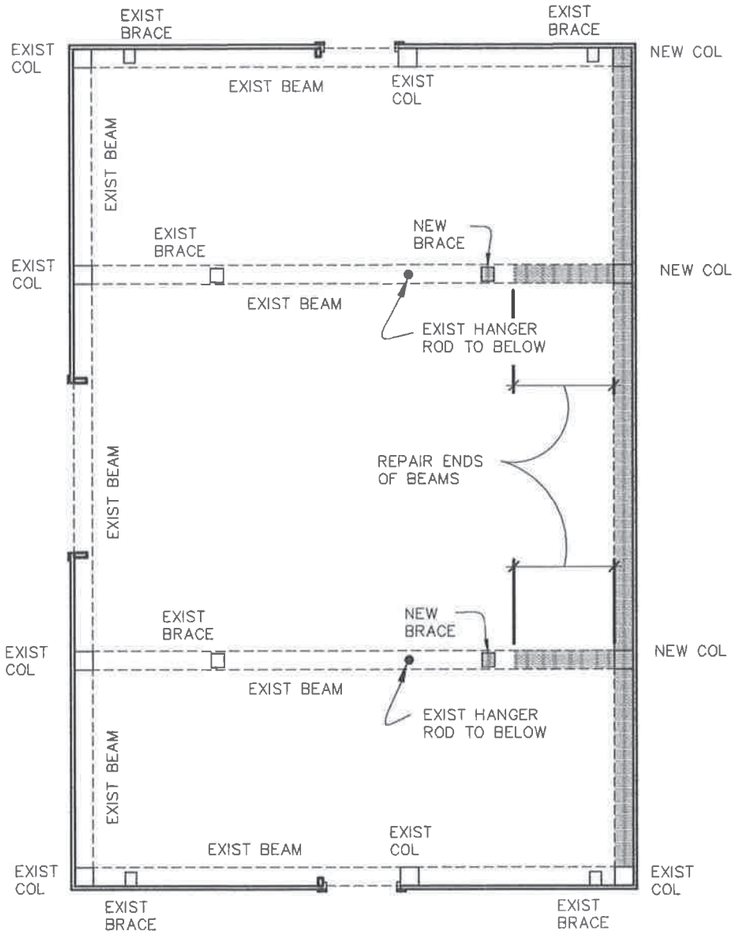
SHEET NO.
S1



1/S2 LOFT LEVEL

3/16" = 1'-0"

MEMBERS SHOWN THUS ARE TO BE RE-ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.



2/S2 LOFT CEILING

3/16" = 1'-0"

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NORTH

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SCALE 3/16"=1-0"

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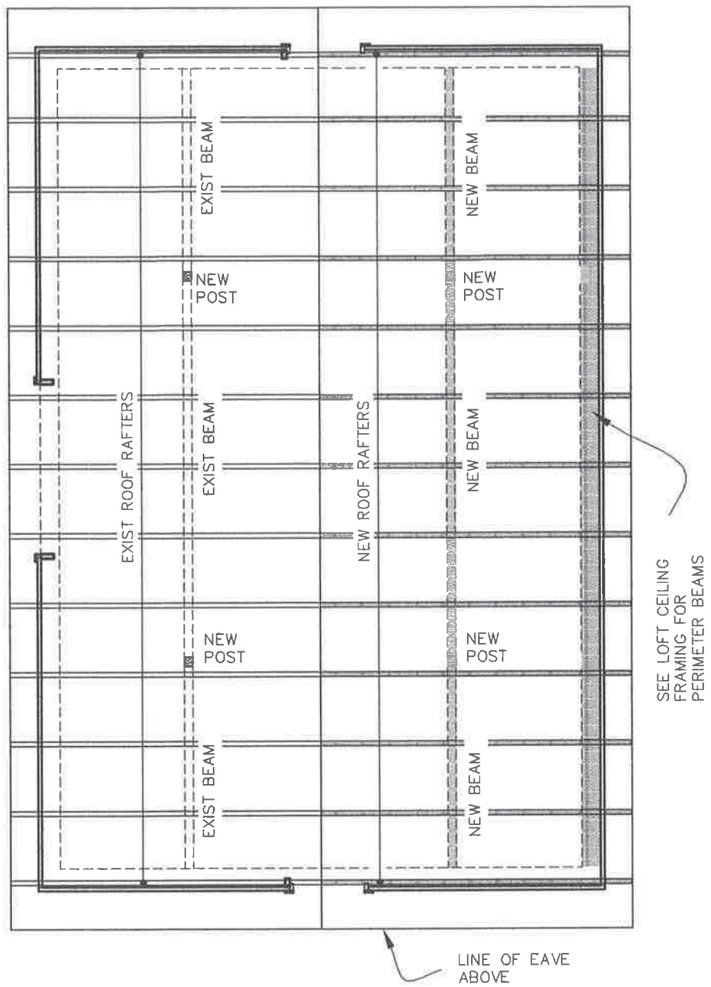
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SHEET TITLE

LOFT LEVEL AND LOFT CEILING FRAMING

SHEET NO.

S2

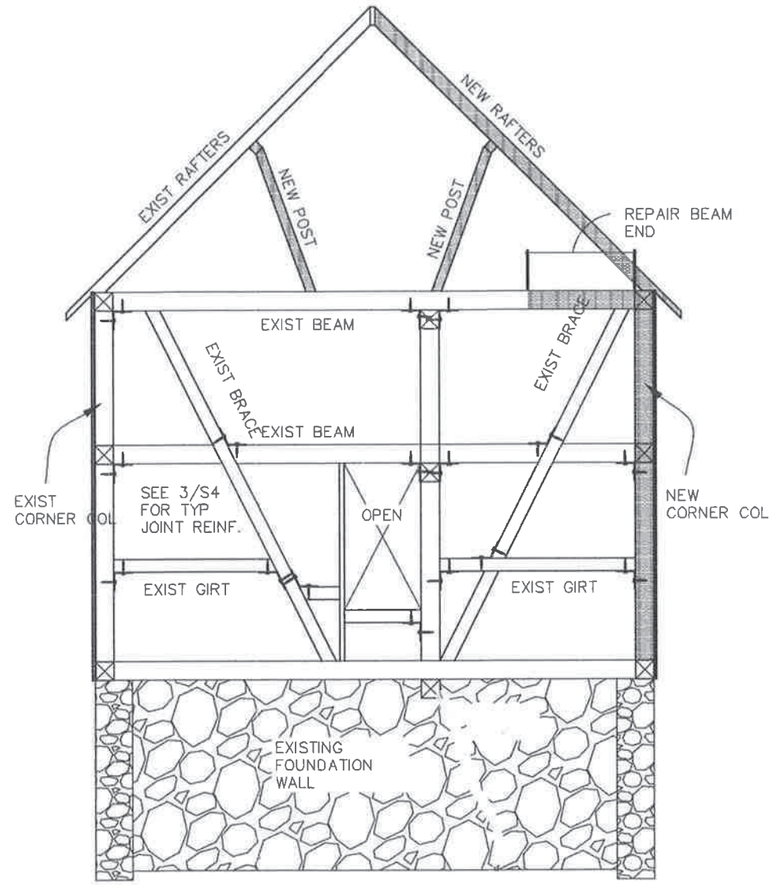


1/S3 ROOF FRAMING

3/16" = 1'-0"

MEMBERS SHOWN THUS ARE TO BE RE-ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

NORTH



SEE KEY PLAN 2/S5

2/S3 NORTH WALL ELEVATION

SOUTH WALL ELEVATION SIM 3/16" = 1'-0"

MEMBERS SHOWN THUS ARE TO BE RE-ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

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CHECKED

SCALE 3/16"=1-0"

DATE 6/28/2011

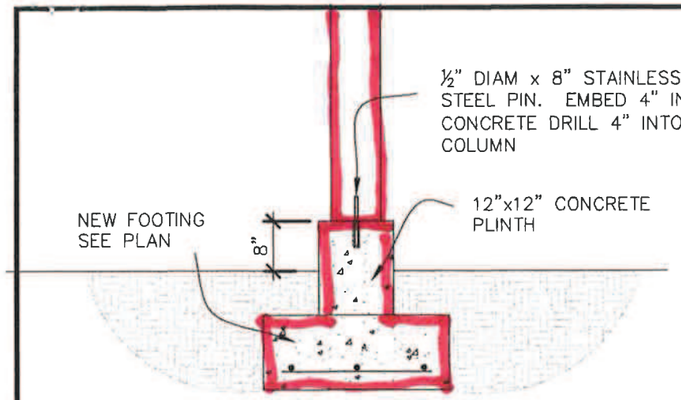
NOTES

SHEET TITLE

ROOF FRAMING AND NORTH ELEVATION

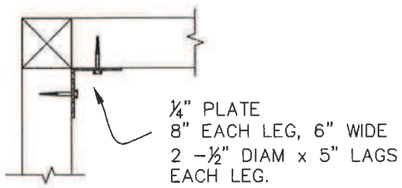
SHEET NO.

S3



2/S4 SECTION

1/2" = 1'-0"

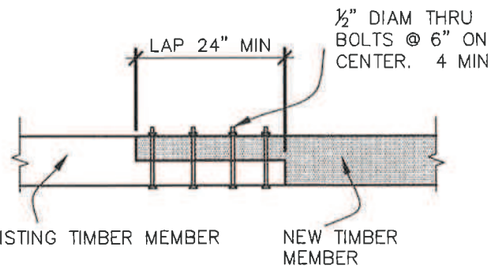


TYPICAL FRAME JOINT REINFORCING

ASSUME CONNECTION PLATES ARE REQUIRED AT ALL LOCATIONS SHOWN. ACTUAL REQUIREMENTS WILL BE BASED ON A REVIEW OF EXISTING CONDITIONS AT THE TIME OF RE-CONSTRUCTION AND WILL BE BASED ON THE CONDITION OF THE EXISTING TIMBER JOINT. JOINTS EXHIBITING DAMAGE, DETERIORATION, DISLOCATION OR SEPERATION WILL REQUIRE REINFORCING AS SHOWN.

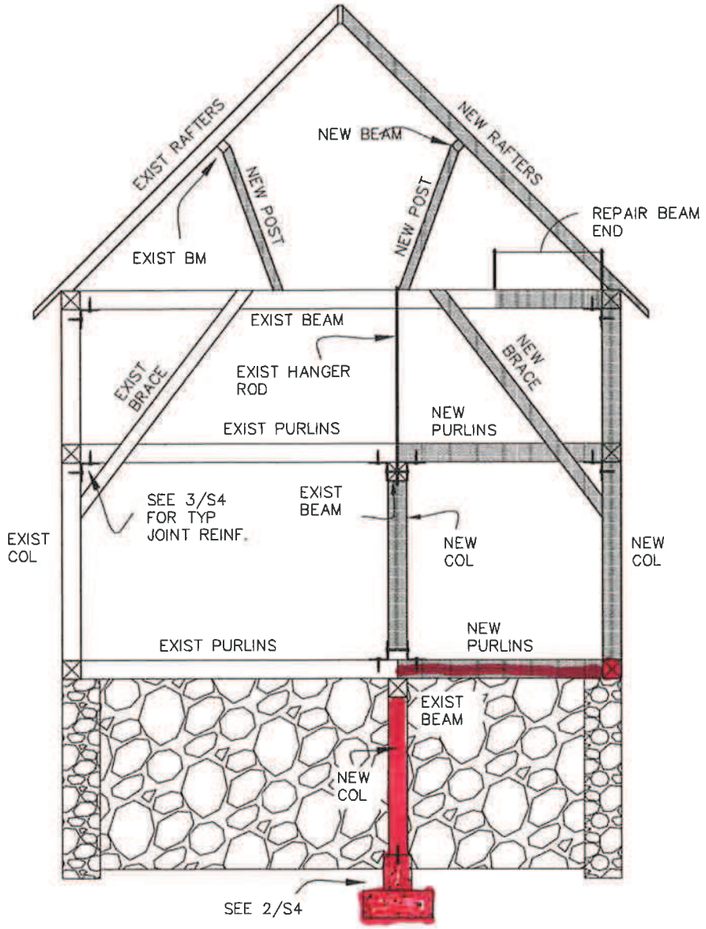
3/S4 SECTION

1/2" = 1'-0"



4/S4 SECTION

1/2" = 1'-0"



SEE KEY PLAN 2/S5

1/S4 INTERIOR BRACED FRAME

2 BRACED FRAMES THUS

3/16" = 1'-0"

MEMBERS SHOWN THUS ARE TO BE RE-ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

MEMBERS SHOWN ARE WORK COMPLETED BY PAST GRANTS

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Mattson Macdonald Young structural engineers
Bagstad Creek Business Center
901 North 3rd Street, Suite 100
Minneapolis, MN 55401
612.827.7655 voice
612.827.9810 fax

DRAWN DHM

CHECKED

SCALE 3/16"=1-0"

DATE 6/28/2011

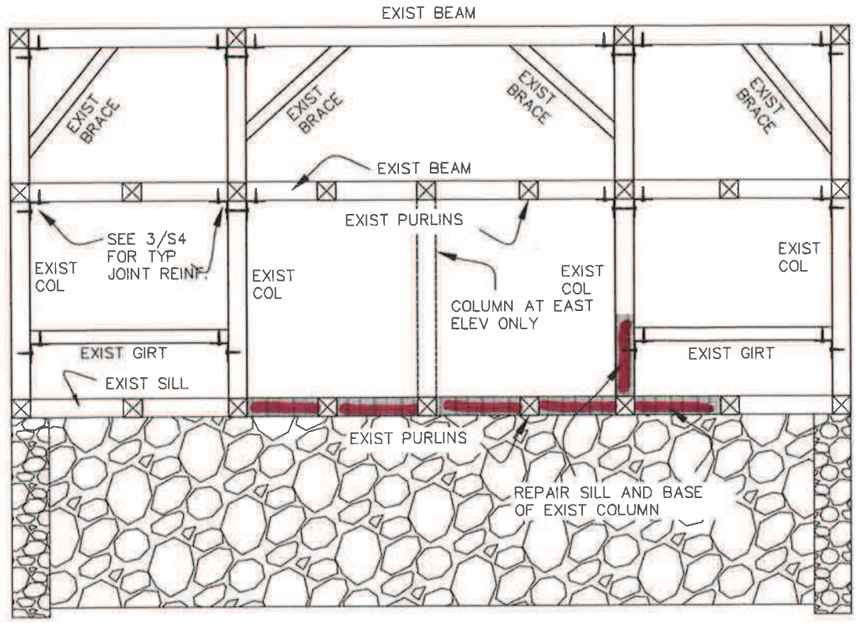
NOTES

SHEET TITLE

INTERIOR FRAME AND DETAILS

SHEET NO.

S4



SEE KEY PLAN 2/S5

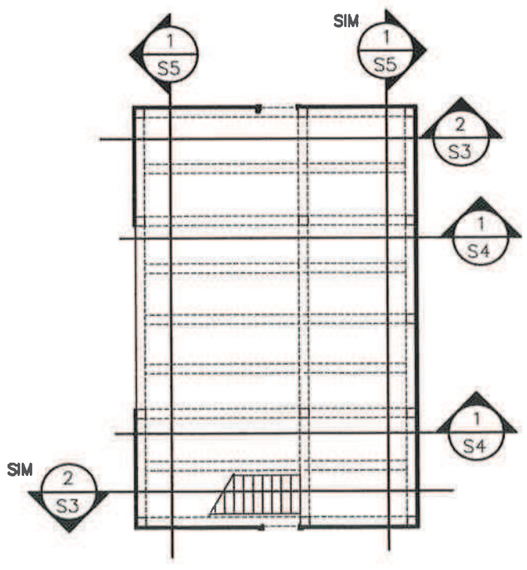
1/S5 WEST WALL ELEVATION

3/16" = 1'-0"

EAST WALL ELEVATION ASSUMED TO BE SIMILAR. ALL OF EAST WALL ELEVATION IS TO BE RE-CONSTRUCTED.

MEMBERS SHOWN THUS ARE TO BE RE-ASSEMBLED USING EXISTING HAND HEWN MEMBERS SALVAGED FROM THE EXISTING BUILDING OR PROVIDE NEW TO MATCH ORIGINAL SIZE AND CHARACTER.

MEMBERS SHOWN ARE WORK COMPLETED BY PAST GRANTS



2/S5 KEY PLAN

3/16" = 1'-0"

STRUCTURAL NOTES

Unless noted otherwise on the plans and/or in the details, these notes shall apply. If there are discrepancies between the plans/details and these notes, the contractor shall conform to the more stringent requirements, unless clarified with the Structural Engineer of Record (SER) prior to work.

MATERIAL STRENGTHS

Structural Steel
W and WT shapes - ASTM A992, Fy = 50 ksi
Misc. structural steel - ASTM A36, Fy = 36 ksi

Structural Steel Fasteners
Anchor rods - ASTM F1554, Gr. 36, Fy = 36 ksi
Threaded rods and bolts - ASTM A36, Fy = 36 ksi

Reinforcing Steel
Deformed Bars - ASTM A615, Gr. 60, Fy = 60 ksi

Concrete
f 'c = compressive strength in 28 days
4,000 psi unless noted otherwise
3,000 psi for footings

Structural Lumber
All dimensional lumber - #2 Douglas Fir or equal
Treated lumber - #2 Southern Pine or equal

GENERAL NOTES
The contractor is solely responsible for site safety including all temporary precautionary measures and safety programs. Site observation visits by the SER do not include review of the contractor's safety precautions.

EXISTING CONDITIONS
Contractor shall verify all dimensions, elevations, and details of existing structure where they affect this construction. Notify architect and SER if there are any deviations from the contract documents. Contractor shall field verify dimensions and elevations prior to fabrication of structural members.

SHORING
General Contractor shall be responsible for temporary shoring for existing construction until new construction is in place and properly anchored in final form.

TEMPORARY BRACING
All structural members are designed for in-place loads. Contractor is responsible for bracing, without overstressing, all structural elements as required at all stages of construction until completion of this project.
Provide temporary lateral support for all walls until walls are adequately braced by permanent structure.

FOOTINGS/FOUNDATIONS
Wall footings are cast-in-place concrete with continuous reinforcing placed 3" clear of bottom and 2" clear at top and sides.
Wall footings are centered under walls and column footings under columns.
Contractor shall be responsible to implement hot weather concrete requirements per ACI 305 and cold weather concrete requirements per ACI 306.
The contractor shall verify the location of all existing underground utilities and tanks prior to beginning excavation.

CONCRETE
Provide ready-mixed concrete per ASTM C94. Portland cement shall be ASTM C150, Type I. Use only one brand of cement throughout the work. Provide concrete aggregates meeting the requirements of ASTM C33.
Water shall be clean, free of deleterious amounts of acids, alkalis, or organic materials, and shall be considered potable. Provide admixtures to reduce water content, provide air-entrainment, or alter the quality of the concrete to meet the job conditions. Admixtures shall be indicated in the mix designs.
All concrete exposed to weather, freeze-thaw conditions or de-icing chemicals shall contain 5% - 7% entrained air.
Slump shall be determined by ASTM C143 as follows:
Footings 3" - 4"
Workability of the concrete shall be maintained so that concrete will completely fill forms without voids and will embed and bond to reinforcing without separation of materials.
Mix and deliver concrete in accordance with ASTM C94. Cooled or heated water shall be used in accordance with ACI 306 and 305. Ready mixed concrete shall be transported to the site in watertight agitators or mixer trucks loaded not in excess of rated capacities. Discharge at the site shall be within one hour after charging. Air-entraining and chemical admixtures, if approved, shall be charged into mixer as a solution as recommended by the manufacturer.
Concrete placed during cold weather shall conform to the requirements of ACI 306.1. For hot weather conditions, apply recommendations of ACI 305.
Place concrete in accordance with ACI 304 "Guide for Measuring, Mixing, Transporting, and Placing Concrete". Use mechanical vibrating equipment for consolidation. Do not use vibrators to transport concrete in forms.
Protect fresh concrete from premature drying and excessively hot or cold temperatures and maintain with minimal moisture loss at a relatively constant temperature above 55 degrees Fahrenheit.
Provide wire, plastic, or precast concrete spacers, chairs, slab bolsters, support bars, etc. for support of reinforcing steel in proper position while placing concrete. Chairs/bolsters shall be stable and resist tipping.

STRUCTURAL STEEL
All structural steel shall be designed, fabricated, and erected according to the specifications of the American Institute of Steel Construction (AISC) Latest Adoption.
Structural steel supplier shall supply all cap plates, bearing assemblies, base plates, stiffeners, splices and connections, and shall design same.
All welding shall match filler materials in accordance with the rules of the American Welding Society (AWS) Structural Welding Code, Latest Adoption.
All welders shall be certified by the rules of the American Welding Society.
Modification of structural steel members in the field is not permitted without written approval by the SER.

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tel: 651.756.7073
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Mattson Macdonald Young Structural Engineers

DRAWN DHM
CHECKED
SCALE 3/16"=1-0"
DATE 6/28/2011

NOTES

SHEET TITLE
WEST WALL ELEVATION AND NOTES

SHEET NO.
S5



APPENDIX I

NATIONAL REGISTER NOMINATION FORM

toric Name: The Andrew Peterson Farm

ommon Name: The Rock Isle Farm

wner's Name and Address: Mr. and Mrs. Ward Holasek
Route 1, Box 16
Waconia, Minnesota 55387

County: Carver

Community:

Address/Legal Desc.:
SE¼,SE¼, Sec.8, T116 R24

lassification:

uildings X Structure _____ Object _____ District _____

Acreage:

4 acres

ondition:

xcellent X Good _____ Fair _____ Deteriorated _____

Verbal Boundary Desc.:

(see map)

pen to the Public:

es No X

Visible from the road:

Yes X No

ccupied:

es X No

Present Use:

Farm

istory:

ate Constructed: 1870

Original Owner: Andrew Peterson

rchitect/Builder: Andrew Peterson

Original Use: Farm

UTM Reference:

15/443290/4967860

escription:

Five elements of the original Peterson Farmstead remain intact in their original location (see figure 1). The farmhouse, built between 1867 and 1870, is a two story frame structure with a simple gable roof oriented east-west. The house is somewhat unusual in that it was originally and still is, sheathed with vertical siding. Triangular windows embellish the gables. The buff-brick kitchen wing was added at a somewhat later date. The porch on the south side was rebuilt in its present configuration after Peterson's death and rests on a concrete foundation. Also dating to Peterson's lifetime are the North and South barns. Both are relatively small, story and a half "bank-barns" built of hand hewn framing on field-stone foundation, and sheathed in board-and-batten siding. The north half of the "Log House" is of hand-hewn horizontal log - cont.

Level of Significance:

Local _____

State X

Nation _____

Status:

Survey	Date
Local	10/76
State	12/77
Nat'l. Reg.	
Nat'l. Land.	
HABS/HAER	

ignificance:

The importance of the Andrew Peterson farm lies both in the preservation of the farmstead and in the historical stature of Andrew Peterson himself.

Andrew Peterson was born in Sweden in 1818 and emigrated to Burlington, Iowa in 1850, where he worked briefly as a nurseryman. In 1855, shortly before he journeyed to Minnesota, Peterson began the diary which he continued to his death and which was to bring him posthumous fame.

While in Burlington, Peterson joined a group of Swedish Baptists under the leadership of Fredrik Olaus Nilsson, who had fled Sweden, to escape religious persecution. In the Spring of 1855 the group moved to Minnesota and established claims in what was to become Laketown Township in Carver County. Peterson's diary records the construction of his first log house in 1855 and the establishment of the Scandia Swedish-Baptist Church in his house on August 1, 1955. This church founded the Minnesota Swedish Baptish Conference. Terse, unembellished entries record his marriage to Elsa in 1858, the construction of his new house cont.

Theme/s:

Primary Immigration and Settlement

Secondary _____

Other Horticulture

Local Contact/Org.:
Heritage Committee
Carver County Historical Society

Prepared by and date:

Edward Lofstrom
January 1978

Description -- continued

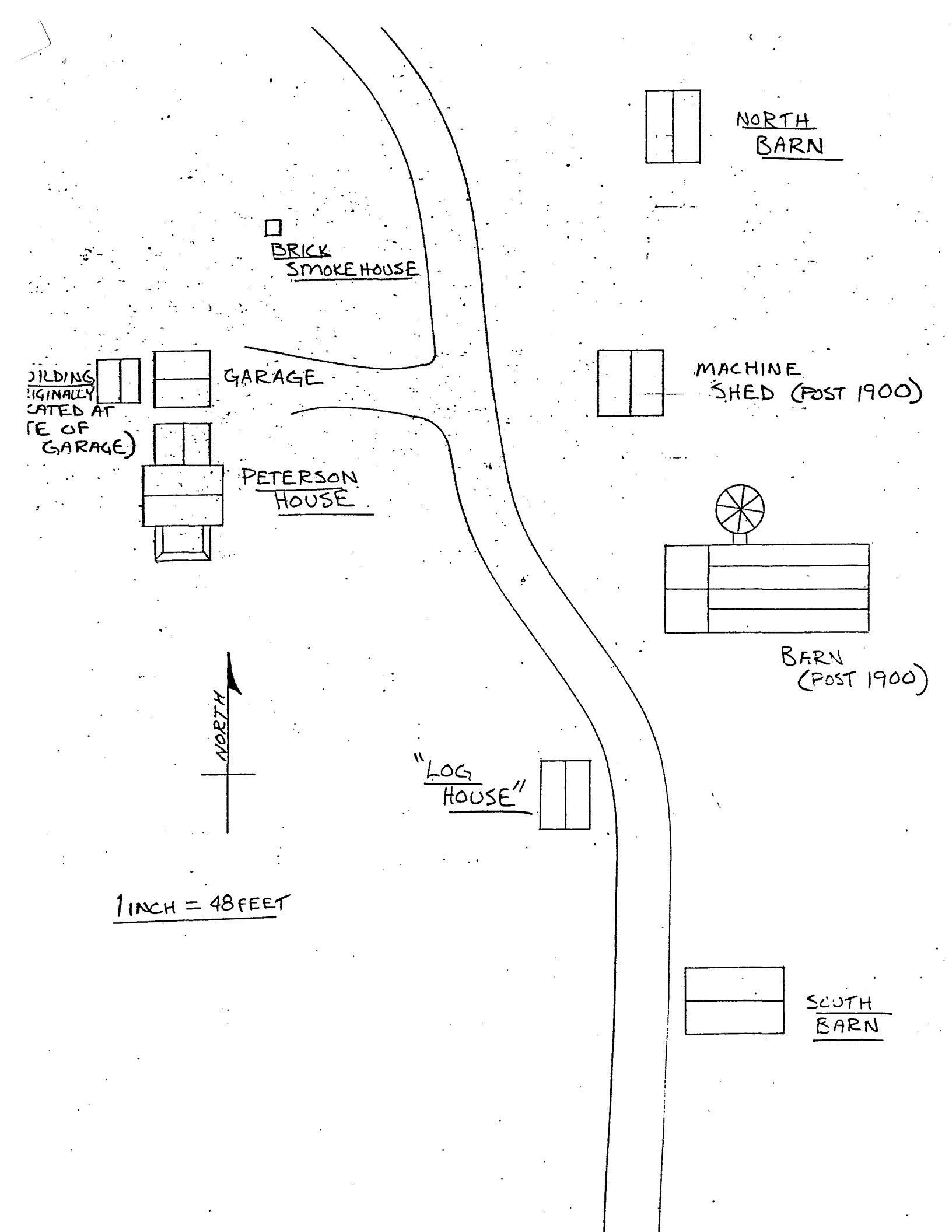
construction; the south half is a later addition of hewn timber frame construction. The original purpose of the building is not certain, but it was used as a granary during Peterson's life. Notes in Peterson's handwriting recording grain transactions with his neighbors embellish most of the flat surfaces inside the building. The smoke house is of buff brick, and is also part of the original farmstead. Later additions to the farm include the dairy barn, machine shed, and a tenant farmer's house, now demolished. The garage immediately to the north of the house was built recently by the present owner. Perhaps the most significant missing element is Andrew Peterson's orchard, which is gone completely.

Significance -- continued

between 1867 and 1870, the birth of his nine children, and his increasing prosperity and prominence in the local community. The diary is also a priceless sociological record that details the seasonal rhythm of hard work that was pioneer life and the system of barter, shared labor, and mutual aid vital to the settlers' success.

During his lifetime Andrew Peterson was best known for his efforts to develop varieties of apples and other fruits that were hardy in Minnesota. Peterson began his experiments in 1856. By the 1870s he had discovered several Russian apple varieties that bore well and were hardy in Minnesota. By 1875 his principal income came from selling hardy apple trees. He continued his experiments throughout his life and his efforts were primarily responsible for the establishment of a viable fruit industry in Minnesota. Peterson died in 1898. Peterson's diary was donated by his family to the Minnesota Historical Society in 1939.

Peterson seemed destined to become a historical figure of minor significance in Minnesota. However, in 1948 the prominent Swedish novelist Vilhelm Moberg discovered the diary and made extensive use of it in his trilogy about the Swedish emigration of the 19th century (The Emigrants (1951), Unto a Good Land (1954), The Last Letter Home (1961)). Andrew Peterson's life indirectly became part of the broader popular culture in 1971 when two movies based on Moberg's trilogy were released - "The Emigrants" and "The New Land."


NORTH BARN
BRICK SMOKEHOUSE
GARAGE
MACHINE SHED (POST 1900)
PETERSON HOUSE
BARN (POST 1900)
NORTH
"LOG HOUSE"
1 INCH = 48 FEET
SOUTH BARN



Andrew Peterson Farm, Laketown Twp., Carver Co., 1977, Peterson Farm House, looking NE



Andrew Peterson Farm, Laketown Twp., Carver Co., 1977, "North Barn" looking NW



Andrew Peterson Farm, Laketown Twp., Carver Co., 1977, "South Barn" looking SE



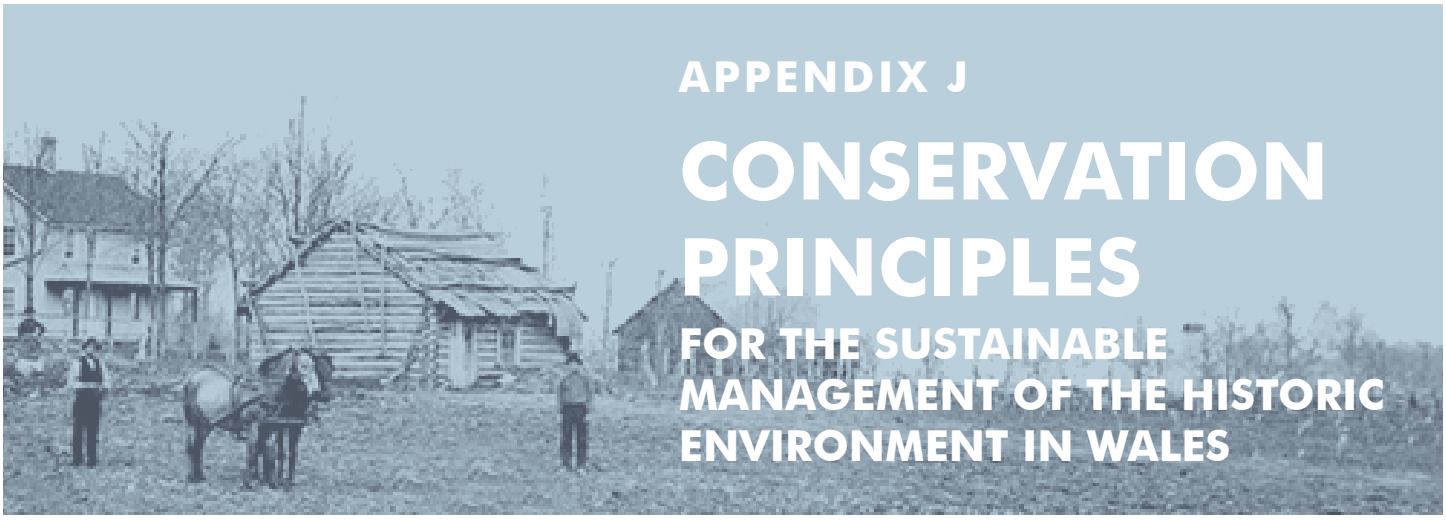
Andrew Peterson Farm, Laketown Twp., Carver Co., 1977, "Log House" granary, looking NW



Andrew Peterson Farm, Laketown Twp., Carver Co., 1977, 20th century dairy barn and silo looking east

Andrew Peterson Farm, Laketown Twp., Carver Co., 1898, Looking NE





APPENDIX J

CONSERVATION PRINCIPLES

FOR THE SUSTAINABLE MANAGEMENT OF THE HISTORIC ENVIRONMENT IN WALES

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Conservation Principles

www.cymru.gov.uk

for the sustainable management of the historic environment in Wales

















Cadw

Foreword

The people of Wales have inherited a unique historic environment. This environment has been shaped by past generations, highlighting where we have come from and enhancing our quality of life. The history that surrounds us gives us a sense of place and helps to define us as a nation. The heritage of Wales is also very rich and diverse. Some elements are of international importance and have justifiably been given global recognition as World Heritage Sites.

But the great medieval castles of Gwynedd and the legacy of the Industrial Revolution in Wales represent only a small fraction of the numerous historic assets that form our historic environment. The entire rural and urban landscape can be treated as an historic asset; it is made up of elements that on their own may seem insignificant, but together define the places in which we live.

However, this historic environment is also a fragile resource. We have an obligation and duty to manage change in a sensitive and sustainable way and to ensure that what is significant is passed on to future generations. The historic environment is an asset, not a barrier to change. Equally there must be a recognition that once elements have been destroyed or altered, they can seldom be recovered. We all have a role to play in ensuring that this balance is achieved. The historic assets of Wales are in a variety of ownerships: public and private, religious and secular, third sector, local and central government. As curators of this heritage the owners of significant historic places need to be guided by a conservation philosophy that will help with their decision making. We intend that the conservation principles contained in this document will help articulate this philosophy.

The principles will also assist in the ambition of the Welsh Assembly Government to place sustainable development at the heart of its work. In May 2009, the Assembly Government launched *One Wales: One Planet*, which articulates how it wishes to develop Wales in ways which contribute sustainably to people's economic, social and environmental well-being. In this document Wales's rich culture and heritage is recognized as a vehicle for regeneration and for fostering local character and distinctiveness. These themes can also be cross-referenced to *People, Places, Futures: The Wales Spatial Plan* and the *Environment Strategy for Wales*. The Minister for Heritage issued his *Welsh Historic Environment Strategic Statement* in October 2009, which emphasizes the key role that heritage can make to sustainable economic and social development. The conservation principles set out here are intended to provide the framework for guiding how this can be achieved.

The Assembly Government, through Cadw, its historic environment division, intends to apply these principles when undertaking work it carries out on sites in its ownership and care, and in considering applications which come before it for determination. Cadw also intends to apply these principles when contributing to future planning policy and guidance relating to the historic environment and programmes where it provides financial support. Other organizations and individuals in Wales are strongly encouraged to make use of them when considering changes that affect the historic environment.

Pentre Ifan Burial Chamber in Pembrokeshire was the first historic site in Wales to be given legal protection. Over the following 125 years, great efforts have been made to protect our historic environment. Cadw, through its statutory and non-statutory designation programmes, has identified many thousands of historic assets worthy of long-term preservation, including archaeological sites, historic buildings, underwater wrecks, historic parks and gardens. The protection of such important historic assets from unnecessary destruction or ill-considered change can be seen as a great success of the twentieth century.

However, these designated historic assets sit within broader historic landscapes. The need for the detailed understanding and management of these landscapes has led to the establishment of a *Register of Historic Landscapes*, which is unique to Wales. Detailed characterization studies are also being undertaken, which define areas in both our urban and rural landscapes that have particular and distinctive historic qualities. Such studies allow the impacts of a development or other land-use change to be assessed objectively and it also highlights the opportunities that historic character can play in regeneration.

The importance and added value of heritage are increasingly being appreciated. However, change and decay are inevitable and the preservation of every part of a historic asset or of all the historic landscape will be impossible. The objective of *Conservation Principles* is to inhibit decay and manage change, so that the significant values of individual historic assets or historic landscapes are carried forward for future generations to enjoy. In Wales that future has to be sustainable; investment in the historic environment needs to bring social and economic benefits. However, change also needs to recognize and manage the impact on the values that we place on our historic environment.

Marilyn Lewis
Director of Cadw
March 2011

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Principle 3 The historic environment is a shared resource 11

Principle 4 Everyone will be able to participate in sustaining the historic environment 12

Principle 5 Decisions about change must be reasonable, transparent and consistent 13

Principle 6 Documenting and learning from decisions is essential 14

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Understanding heritage values and assessing significance 16

Managing change to an historic asset 18

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Introduction

Aims

The historic environment is central to Wales's cultural heritage and sense of identity. It is a resource that should be sustained for the benefit of present and future generations. In this document, Cadw, the historic environment division of the Welsh Assembly Government, sets out a logical approach for making decisions about all aspects of the historic environment. *Conservation Principles* will help reconcile the protection of the historic environment with the economic and social needs, and aspirations of the people who live in it.

The six conservation principles set out below are based on those developed by English Heritage and published in 2008 (www.englishheritage.org.uk/conservation.principles). Cadw has adapted these principles for use in Wales. We acknowledge a considerable debt to English Heritage who developed their principles after extensive consultation with outside organizations. Many of the explanatory paragraphs are also adapted from their *Conservation Principles, Policies and Guidance*, but have been tailored to meet the needs of Wales. The English Heritage document includes sections on 'Understanding Heritage Values,' 'Assessing Heritage Significance' and 'Managing Change to Significant Places', which give extended explanations of these topics. In this document, Cadw has replaced these with a more accessible and succinct summary entitled 'Understanding heritage values and assessing significance'. Other organizations, such as the National Trust and the National Trust for Scotland, have also produced their own 'Conservation Principles', and a consistent approach is emerging.

Conservation Principles will inform Cadw's approach to the protection and management of the historic environment as a whole, including the community engagement, learning and access issues addressed under Principle 3. They will ensure that our actions and decisions are justified and consistent. The following section, 'Conservation Principles in Action', will specifically guide Cadw in applying its principles to its role in the development process, and in managing the historic sites in its care. However, other organizations and individuals such as local authorities, property owners, developers,

St Davids Bishop's Palace, Pembrokeshire
The innovative use of sacrificial renders and selective stone replacement has conserved this site for the future.

and their advisers, are strongly encouraged to use *Conservation Principles* in their decision making.

The entire rural and urban landscape of Wales is an historic asset. However, it is also possible to define individual components of the historic environment, small or large, and including those under the ground or under water, that can be identified as specific historic assets. Historic assets, or combinations of historic assets, of any size, including historic buildings, archaeological sites, historic areas or landscapes, need to be understood and managed at different levels for different purposes. Every historic asset also occupies a site which will have natural environmental values as well as heritage values. However, when this document refers to the 'fabric', this means only the man-made parts of the site. It should also be stressed that the conservation principles do not only apply to those historic assets that meet the particular thresholds of significance necessary for formal international, national or local designation (for example through registration or statutory listing and scheduling).

Sustainable management of a site begins by gaining an understanding of its cultural and natural heritage values and then setting out its significance. It is essential then to communicate that significance to everyone concerned with that site, and who may be affected by any actions taken. Only then will it be possible to assess which qualities people value, and how they will be vulnerable to harm or loss. Every conservation decision should be based on an understanding of its likely impact on the significance of the fabric and other aspects of the site concerned.

The definition of conservation given below (paragraph 1.2) is that it is 'the careful management of change'. In managing historic assets, 'to preserve' — even accepting its established legal definition of 'to do no harm' — is only one part of what is needed to sustain heritage values. For example, local authorities are required 'to preserve or enhance' conservation areas. This helps emphasize the potential for beneficial change to historic assets by revealing and reinforcing their heritage values. 'To sustain' embraces both preservation and enhancement to the extent that the values of a place allow. 'Considered change' offers the potential to enhance historic assets, as well as generating the need to protect their established heritage values. It is the means by which each generation aspires to enrich the historic environment.

Relationship to other policy documents

The Welsh Assembly Government's current guidance on conserving the historic environment is given in chapter 6 of *Planning Policy Wales*. This is now an online document (http://wales.gov.uk/topics/planning/policy/ppw2010/?lang=en) and is the subject of periodic updating. This is supported by:

Welsh Office Circular 60/96: Planning and the Historic Environment: Archaeology

Welsh Office Circular 61/96: Planning and the Historic Environment: Historic Buildings and Conservation Areas

Future versions of chapter 6 of *Planning Policy Wales* and supporting guidance will cross-refer to and will be informed by aspects of these conservation principles.

There is also relevant guidance in the Welsh Assembly Government's *Technical Advice Note (TAN) 12: Design, TAN 22: Planning for Sustainable Buildings and TAN 8: Planning for Renewable Energy.*

The section on 'Conservation Principles in Action' will be updated to refer to and reflect any new heritage legislation and Government policy as they emerge, and in the light of the experience of their use.

At the international level, [1] the conservation principles reflect many of the presumptions of the *World Heritage Convention*, with its call to give all natural and cultural heritage a function in the life of communities. The conservation principles are consistent with the *Granada Convention* on the protection of the architectural heritage, and the *Valletta Convention* on the protection of the archaeological heritage, both ratified by the United Kingdom. The *European Landscape Convention*, also ratified by the United Kingdom, has been influential, not least for its definition of a landscape as 'an area, as perceived by people… ', and its references to the need to consider sustaining cultural values in managing all landscapes, as well as the importance of public engagement in that process.

[1] *Convention concerning the Protection of the World Cultural and Natural Heritage* (UNESCO, 1972)
Convention for the Protection of the Architectural Heritage of Europe (Granada: Council of Europe, 1985, ETS 121)
European convention on the Protection of the Archaeological Heritage (Valletta: Council of Europe, 1992, ETS 143)
European Landscape Convention (Florence: Council of Europe, 2000, ETS 176)



Conservation Principles

1 Historic assets will be managed to sustain their values

1.1 Changes in the historic environment are inevitable. This can be the result of decay caused by natural processes, damage caused by wear and tear of use, and the need to respond to social, cultural, economic and technological changes. The impact of climate change on historic assets is a particular challenge.

1.2 Conservation is the careful management of change. It is about revealing and sharing the significance of historic assets and ensuring that their special qualities are protected, enhanced, enjoyed and understood by present and future generations.

1.3 To be sustainable, investment in the conservation of the historic environment should bring social and economic benefits. On the other hand, investment in social and economic programmes should bring environmental benefits.

1.4 Conservation of an historic asset is achieved by gaining and sharing an understanding of its significance (see Principles 2 and 3). This understanding will enable:

- The identification of those heritage values which are vulnerable to change.
- The definition of the constraints needed to reveal, protect and sustain those values.
- Achieving a balance between the impact of the different options on the heritage value and significance of the assets affected.
- A consistency in decision making, aimed at retaining the authenticity and future significance of the historic asset.

1.5 All heritage conservation actions lead to interventions. These must be justified by demonstrating that the benefits in protecting, increasing the understanding and sustaining the heritage values of the historic asset decisively outweigh the losses and harm caused.

1.6 New work must respect the setting and significance of the historic assets affected. The quality of design and execution must add value to that site and its setting, both now and in the future.

Tŷ Mawr, Castle Caereinion, Powys
The timber-framed shell of this late medieval farmhouse was rescued from dereliction to make a beautiful modern home.

1.7 The conservation of the historic environment must recognize and respect associated natural environmental values. This will be achieved by an integrated approach to conservation that has identified both the natural and historical values of each asset.

2 Understanding the significance of historic assets is vital

2.1 The historic environment is made up of individual historic features, archaeological sites and historic buildings as well as the landscapes in which they are found. Any part of the historic environment to which people have given a distinctive historical association or identity is considered here to be an historic asset.

2.2 The significance of an historic asset embraces all of the cultural heritage values that people associate with it, or which prompt them to respond to it. These values tend to grow in strength and complexity over time, as understanding deepens and people's perceptions evolve.

2.3 In order to assess the significance of an historic asset, four component values need to be considered. These are:

- Evidential value
- Historical value
- Aesthetic value
- Communal value

These are explained in more detail in the section 'Understanding heritage values and assessing significance' (page 16) but, briefly, they can encompass: the physical remains or surviving fabric of an historic asset (evidential); the contribution of documentary sources, pictorial records and museum collections to forming an understanding of an historic asset (evidential); how historic assets through illustrative or associative values can connect the past with the present (historical); the way in which people draw sensory and intellectual stimulation from an historic asset through its form, external appearance or setting (aesthetic); the social and economic values, and spiritual meanings, that an historic asset has for the people who relate to it (communal).

2.4 Understanding and articulating the values of an historic asset is necessary to inform the decisions about its future. The degree of significance determines what, if any, protection, including statutory designation, is appropriate under law and policy.

3 The historic environment is a shared resource

3.1 Our environment contains a unique and dynamic record of human activity. It has been shaped by successive generations of people responding to the surroundings that they have inherited. It embodies their aspirations, skills and endeavour.

3.2 People value this historic environment as part of their cultural and natural heritage. It reflects the knowledge, beliefs and traditions of diverse communities. It gives distinctiveness, meaning and quality to the places in which we live, providing a sense of continuity and a source of identity. It is a social and economic asset and a resource for learning and enjoyment.

3.3 Each generation is therefore responsible for shaping and sustaining the historic environment to enable people to use, enjoy and benefit from it, without compromising the ability of future generations to do the same.

3.4 Conservation projects will recognize the need to promote greater access, understanding and enjoyment of the historic environment for all groups in society.

3.5 There is a strong public interest in the heritage values of different places, whatever their ownership. The use of law, public policy and investment is justified to protect that interest. The legal procedures needed to obtain planning, listed building and scheduled monument consents provide the mechanisms for arbitrating between private and public interests.

3.6 Owners and occupiers need to recognize and understand the significance of their historic assets, and seek advice and assistance from public sources to help them sustain the heritage in their stewardship.

4 Everyone will be able to participate in sustaining the historic environment

4.1 Everyone should have the opportunity to contribute his or her knowledge of the heritage value of different sites, and to participate in decisions about their future, by means that are accessible, inclusive and informed. This will enable decisions about an important historic asset to be undertaken in an open and transparent manner (see also Principle 5).

4.2 Sharing learning is central to sustaining the historic environment. It raises people's awareness and understanding of their heritage, including the varied ways in which its values are perceived by different generations and communities. It encourages informed and active participation in caring for the historic environment.

4.3 Knowledge and expertise are vital in encouraging and enabling others to learn about, value and care for the historic environment. Experts play a crucial role in discerning, communicating and sustaining the established values of places. They can help people to refine and articulate the values that they attach to places.

4.4 It is essential to develop, maintain and pass on the specialist craft and professional knowledge and skills necessary to sustain the historic environment.

4.5 People should not carry out work on an historic asset unless they have the appropriate skills or qualifications to undertake the work.

5 Decisions about change must be reasonable, transparent and consistent

5.1 Owners and managers of historic assets will be encouraged to seek advice and examples of good practice in preparing their proposals for change.

5.2 Public authorities will make decisions about changes to the historic environment by applying expertise, experience and judgement, in a consistent and transparent process guided by law and policy.

5.3 Public authorities, within the resources available to them, will undertake sufficient assessment and public engagement to inform and justify the decisions they make.

5.4 When considering change, public authorities will give due importance to the heritage values of a site when considering the sustainability of proposals submitted to them.

6 Documenting and learning from decisions is essential

6.1 The information and documentation gathered in understanding and assessing the significance of an historic asset should be retained by the owner and manager of that place, and a copy be placed in a public archive. This will ensure that future generations will benefit from the knowledge gained.

6.2 The records of the justification for decisions, which affect an historic asset and the actions that follow, will be maintained as an accessible and cumulative account.

6.3 Owners and managers of historic assets should monitor and regularly evaluate the effects of change and responses to it, and use the results to inform future decisions. Public bodies similarly should monitor and respond to the effects on the historic environment of their policies and programmes.

6.4 In the unusual event that all or part of an historic asset is to be lost as a result of a decision or inevitable natural process, the opportunity to extract the information that it holds about the past must be taken. This loss will require recording, investigation and analysis, followed by archiving and dissemination of the results, all to a level that reflects its significance.

6.5 Where such a loss is the direct result of human intervention, the costs of this work should be borne by those who benefit from the change, or whose role it is to initiate such change in the public interest.

Applying the conservation principles

Conservation Principles builds on earlier statements and experience to formalize an approach, which takes account of a wide range of heritage values. They are supported by the section below describing how Cadw will put its *Conservation Principles* into action. They are intended to help everyone involved to take account of the diverse ways in which people value the historic environment. They acknowledge that the values of places, including those reflected in landscape designations, should be managed in a sustainable way, fostering close working relationships between cultural and natural heritage interests.

Balanced and justifiable decisions about change to the historic environment depend upon understanding who values different historic assets and why they do so, leading to a clear statement of their significance and, with it, the ability to understand the impact of the proposed change on that significance.

Every reasonable effort should be made to eliminate or minimize adverse impacts on historic assets. Ultimately, however, it may be necessary to balance the benefit of the proposed change against the harm to the asset. If so, the weight given to heritage values should be proportionate to the importance of the assets and the impact of the change upon them.

The historic environment is constantly changing, but each significant part of it represents a finite resource. If it is not sustained, its heritage values will be eroded or lost. In addition, its potential to give distinctiveness, meaning and quality to the places in which people live, and provide people with a sense of continuity and a source of identity will be diminished. The historic environment is a social and economic asset and a cultural resource for learning and enjoyment.

Cadw will apply these principles to the management of the monuments in its care and in undertaking its statutory functions. The principles will be shared with other divisions of the Welsh Assembly Government. Cadw commends them for adoption and application by all those involved with the historic environment in Wales, and in making decisions about its future.

Understanding heritage values and assessing significance

The objective of understanding the heritage values of an historic asset and assessing its significance is to enable an authoritative statement of significance to be made, and allow for the effects of proposed changes to be evaluated. This demands the application of a systematic and consistent process, which is appropriate and proportionate in scope and depth to the decision to be made, or the purpose of the assessment.

English Heritage's *Conservation Principles, Policies and Guidance* (2008) described in detail the family of heritage values and provides an extended explanation on assessing heritage significance. Cadw sees no reason to differ from this set of heritage values. The following provides a summary of these values and on managing change to historic assets.

Heritage values

Evidential value. This derives from those elements of an historic asset that can provide evidence about past human activity, including its physical remains or historic fabric. These may be visible and relatively easy to assess, or they may be buried below ground, under water or be hidden by later fabric. These remains provide the primary evidence for when and how an historic asset was made or built, what it was used for and how it has changed over time. The unrecorded loss of historic fabric represents the destruction of the primary evidence.

Additional evidential values can be gained from documentary sources, pictorial records and archaeological archives or museum collections. To assess the significance of this aspect of an asset, all this evidence needs to be gathered in a systematic way and any gaps in the evidence identified.

Historical value. An historic asset might illustrate a particular aspect of past life or it might be associated with a notable family, person, event or movement. These illustrative or associative values of an historic asset may be less tangible than its evidential value but will often connect past people, events and aspects of life with the present. Of course the functions of an historic asset are likely to change over time and so the full range of changing historical values might not become clear until all the evidential values have been

gathered together. Historical values are not so easily diminished by change as evidential values and are harmed only to the extent that adaptation has obliterated them or concealed them.

Aesthetic value. This derives from the way in which people draw sensory and intellectual stimulation from an historic asset. This might include the form of an historic asset, its external appearance and how it lies within its setting. It can be the result of conscious design or it might be a seemingly fortuitous outcome of the way in which an historic asset has evolved and been used over time, or it may be a combination of both.

The form of an asset normally changes over time. Sometimes earlier pictorial records and written descriptions will be more powerful in many people's minds than what survives today. Some important viewpoints may be lost or screened, or access to them may be temporarily denied. To assess this aspect of an asset, again the evidence of the present and past form must be gathered systematically. This needs to be complemented by a thorough appreciation on site of the external appearance of an asset in its setting.

Inevitably understanding the aesthetic value of an historic asset will be more subjective than the study of its evidential and historical values. Much of it will involve trying to express the aesthetic qualities or the relative value of different parts of its form or design. It is important to seek the views of others with a knowledge and appreciation of the historic asset on what they consider to be the significant aesthetic values.

Communal value. This derives from the meanings that an historic asset has for the people who relate to it, or for whom it figures in their collective experience or memory. It is closely linked to historical and aesthetic values but tends to have additional or specific aspects. Communal value might be commemorative or symbolic. For example, people might draw part of their identity or collective memory from an historic asset, or have emotional links to it. Such values often change over time and they may be important for remembering both positive and uncomfortable events, attitudes or periods in Wales's history. Historic assets can also have social value, acting as a source of social interaction, distinctiveness or coherence; economic value, providing a valuable source of income or employment; or they may have spiritual value, emanating from religious beliefs or modern perceptions of the spirit of a place.

Assessing significance

To identify the heritage values of an asset, its history, fabric and character must first be understood. The relative significance of the different values then needs to be considered. It will be necessary to compare the values of the asset under consideration with others in the locality, region or even nationally, depending on its importance. Drawing on professional expertise in making these comparisons will help ensure the validity of this assessment.

The outcome of this process will be the production of a Statement of Significance. This needs to be a succinct assessment of the historical asset/s under consideration and its values. No Statement of Significance can ever be complete or totally objective and it will inevitably reflect the knowledge and perceptions of the individual or group who produce it. However, it must try to express the values identified fairly and not be influenced by consideration of any changes being proposed. Statements of Significance will change with time as new evidence emerges, or perceptions of the historical contexts, within which the asset falls, change.

All the information and evidence gathered when producing a Statement of Significance should be referenced and archived. A summary needs to be included in any conservation plan prepared for the asset. Copies of the archive and the conservation plan should be deposited in the appropriate national and/or regional Historic Environment Record.

Managing change to an historic asset

Changes to historic assets are inevitable. Over time, natural forces and regular use will lead to the erosion of some of the evidential values such as the fabric. Repair and restoration of the fabric and changes to its setting can affect its aesthetic value. A change in use may add a new historical or communal value.

To ensure the long-term future of historic assets, change needs to be managed to ensure that their significance is not diminished as a consequence. Retaining the economic viability or the social functions of historic buildings will sustain their survival and encourage their regular maintenance. Many archaeological sites are best maintained under sympathetic farming or forestry regimes. These regimes need to remain viable throughout times of economic and climatic change otherwise rapid decay of the sites may follow. Historic landscapes, parks and gardens are dynamic systems, which benefit from sustained and usually traditional management practices.

Nationally important historic assets will normally be designated as scheduled ancient monuments or listed buildings. Conservation areas, which contain a number of historic assets, also have statutory protection. In Wales, the sites on the *Register of Historic Landscapes, Parks and Gardens* are given protection through the planning process. There are well-established procedures through which consent can be sought for works that affect these assets. Owners of historic assets also have responsibilities to conserve the natural environment when they are proposing change.

Changes to an historic asset will involve one, or more likely a combination of the following types of work:

- Routine management and maintenance
- Repair
- Periodic renewal
- Archaeological intervention
- Restoration
- New work or alteration
- Enabling development

How Cadw will consider proposals for these types of work against the conservation principles is set out in the next section 'Conservation Principles in Action'. It is intended that this section will provide a useful guide for those preparing projects for consent. It includes information on 'Integrating conservation with other interests', identifying where it may be necessary to accept a diminution or loss of the heritage values at a particular site to ensure that other needs are met. In these cases some compensation for the loss can be achieved through the realization of evidential value through expert archaeological recording and investigation.



Conservation Principles in Action

Preamble

This section will guide Cadw in making decisions or offering advice about changes to significant historic assets. It is recognized that most proposals that will come before Cadw will include more than one type of change to one or more historic assets. However, by setting out the different processes below, working from beneficial routine maintenance to potentially the most damaging and controversial proposals, Cadw has tried to present the criteria against which their decisions will be made. Formal policy and guidance is given in chapter 6 of *Planning Policy Wales*, and in *Welsh Office Circulars 60/96 — Planning and the Historic Environment: Archaeology* and *61/96 — Planning and the Historic Environment: Historic Buildings and Conservation Areas*. This policy and guidance will be subject to periodic review.

Tension between conservation and other public policies or legitimate private interests usually arises from a perceived need to harm the heritage values of the historic assets to be affected. In complex cases, it is important to keep a sense of proportion and not automatically to assume that cultural or natural heritage values must prevail. A key objective of *Conservation Principles* is to provide the framework for a dialogue, based on mutual understanding and respect, from which sustainable solutions will emerge.

There will be cases where part or all of some historic assets will be lost. In these cases, comprehensive archaeological recording must be undertaken as part of the project. There will be other cases where proposed enabling development will meet the tests set out in paragraph 49 below. In these cases, some historic assets will be conserved and sustained, whilst others will have their values diminished.

When preparing development proposals that affect significant historic assets, applicants are encouraged to develop a Conservation Plan. Applicants are also required to produce Design and Access

Cloister Garden, Aberglasney, Carmarthenshire
Extensive archaeological and historical research led to the restoration of the structure of this early seventeenth-century garden (© Aberglasney Restoration Trust).

Statements in which they describe the philosophy that they have adopted and decisions that they have taken in the preparation of the design of the new work and facilities they are seeking to build (see *TAN 12: Design*). In preparing these documents, it is hoped that *Conservation Principles* will assist in resolving any potential conflicts that might arise from the proposals.

Routine management and maintenance

1 The conservation of historic assets is founded on appropriate and planned routine management and maintenance.

2 The values of all historic assets, ranging from a single feature to an area of landscape, will be quickly obscured or lost if long-standing management and maintenance regimes are discontinued. Such regimes are often closely linked to historic design, function and stewardship, and are dependent on traditional processes and materials. Since most habitats in Wales are the result of long-established land management practices, sustaining their ecosystems can depend upon continuing those practices. Reinstating a lapsed regime can help to recover both cultural and natural heritage values.

3 Regular monitoring should inform continual improvement of planned maintenance and identify the need for periodic repair or renewal at an early stage. If a permanent solution to identified problems is not immediately possible, temporary works should be undertaken to prevent the problems from escalating. Temporary solutions should be effective, timely and reversible.

Repair

4 Repair necessary to sustain the heritage values of an historic asset is normally desirable if:

a. there is sufficient information comprehensively to understand the impacts of the proposals on the significance of the asset; and
b. the long-term consequences of the proposals can, from experience, be demonstrated to be benign, or the proposals are designed not to prejudice alternative solutions in the future; and
c. the proposals are designed to avoid or minimize harm, if the actions needed to sustain particular heritage values are in conflict.

5 It is important to look beyond the immediate need for action, to understand the reasons for the need for repair and plan for the long-term consequences of inevitable change and decay. While

sufficient work should be undertaken to achieve a lasting repair, the extent of the repair should normally be limited to what is reasonably necessary to make failing elements sound and capable of continuing to fulfil their intended functions.

6 The use of materials or techniques with a lifespan that is predictable from past performance, and which are close matches to those being repaired or replaced, is recommended. This tends to carry a low risk of future harm or premature failure. These repairs are often initially, visually distinctive and easily reversible. By contrast, the longer-term effects of using materials or techniques that are innovative and relatively untested are much less certain.

Not all historic building materials or techniques were durable — iron cramps in masonry, or ungalvanized steel windows, for example, are both subject to corrosion. Some structural failures are the inevitable, if slowly developing, consequences of the original method of construction. Once failure occurs, stabilizing the structure depends on addressing the underlying causes of the problem, not perpetuating inherent faults.

7 The use of original materials and techniques for repair can sometimes destroy more of the original fabric, and any decoration it carries, than the introduction of reinforcing or superficially protective modern materials. For example, these may offer the optimum conservation solution if they allow more of the significant original fabric to be retained.

In historic landscapes, planting may need to utilize alternative species, to resist disease or the effects of climate change. Before making decisions, it is essential to understand all the heritage values of the elements concerned, and to consider the longer-term, as well as the immediate, conservation objectives.

8 Sometimes, the action necessary to sustain or reinforce one heritage value can be incompatible with the actions necessary to sustain others. An example might be where subterranean structural repairs to a building would cause unacceptable archaeological damage. Understanding the range, inter-relationships and relative importance of the heritage values associated with an historic asset should establish priorities for reconciling or balancing such tensions. While every reasonable effort should be made to avoid or minimize potential conflict, contrived solutions requiring intensive maintenance are likely to be difficult to sustain.

Periodic renewal

9 Periodic renewal of elements of an historic asset is justified, when not to do so would lead to greater losses of the historic fabric and heritage values of that place.

10 Periodic renewal differs from maintenance in that it occurs on a longer cycle, is usually more drastic in nature and often has a greater visual impact. This issue arises most frequently with historic buildings and historic parks and gardens. It involves the temporary loss of certain heritage values, such as the aesthetic value of the patina of age on an old roof covering, or the value of a dying tree as a habitat for invertebrates. However, these values are likely to reappear during the next cycle of use, provided the replacement is physically and visually compatible (normally 'like for like' to the extent that this is sustainable). By contrast, the consequence of not undertaking periodic renewal is normally more extensive loss of both fabric and heritage values.

11 A programme of archaeological or building recording may need to accompany periodic renewal. For example, the replacement of a roof covering may reveal how it was originally laid, and the re-plastering or re-rendering of a wall may reveal significant evidence of earlier phases of the building's history beneath.

12 The justification required for periodic renewal will normally be that the fabric concerned is becoming incapable of fulfilling its intended functions through more limited intervention. In addition, where important landscapes are concerned, there is a special case where successional planting cannot achieve this objective in a less drastic way. Harm to values that will normally be recovered during the next cycle can, in most cases, be discounted, but potential permanent harm cannot be ignored in making the decision.

Archaeological intervention

13 Archaeological intervention into an historic asset, which involves the material loss of evidence, would normally be acceptable only if:

a. preservation *in situ* is not reasonably practicable; or
b. it is demonstrated that any potential increase in knowledge
   - cannot be achieved using non-destructive techniques; and
   - is unlikely to be achieved at another place whose destruction is inevitable; and
   - is predicted decisively to outweigh the loss of the primary resource.

c. it is required to evaluate the potential harm of a development proposal.

If acceptable, an archaeological intervention demands:

d. a skilled team, with the resources to implement a project design based on explicit research objectives;
e. the production of an authoritative record;
f. funding arrangements for the subsequent conservation and public deposit of the site archive, and for appropriate analysis and dissemination of the results within a set timetable;
g. a strategy to ensure that other elements and values of the place are not prejudiced by the work, whether at the time or subsequently, including the conservation of any elements to be left exposed.

14 The historic environment provides a unique record of past human activity, but differs from written archives in that 'reading' some parts of it can be achieved only through the destruction of the primary record. This approach applies particularly to the excavation of buried archaeological deposits, but can be relevant to the physical investigation of structures. It concerns a level of intervention that goes beyond the evaluation and targeted investigation that may be necessary to inform and justify conservation management decisions.

15 Experience has shown that with the continuing development of investigative techniques, it will be possible to extract more data from excavation and other types of intervention in the future than is currently possible. This demands a cautious approach to the use of a finite resource, and must avoid the loss of integrity of the historic assets of the site under investigation. However, it cannot reasonably exclude research, where this will increase our knowledge of the significance of that site and contribute to the better understanding of the archaeology and history of Wales.

16 Archaeological intervention must be justified primarily by considering the potential gain in knowledge in relation to the impact on the archaeological resource, and specifically on the place or type of site in question. Established, relevant research framework priorities should be taken into account. The level of intervention should always be the minimum necessary to achieve the research objectives, and make full use of non-destructive techniques. It needs to be extensive enough to ensure that the full research potential of what is necessarily to be destroyed in the process can be realized.

Restoration

17 The restoration of an historic asset will normally only be acceptable if:

a. the enhanced heritage value of the elements that would be restored decisively outweighs the value of those that would be lost; and
b. the work proposed is justified by compelling evidence of the evolution of that place, and is executed in accordance with that evidence; and
c. the form in which the asset currently exists is not the result of a significant historical event but rather due to progressive decay or mis-management; and
d. the work proposed respects previous forms of that place and is designed not to prejudice alternative solutions in the future; and
e. the maintenance implications of the proposed restoration are considered to be sustainable.

18 Restoration involves the recreation of the lost parts, appearance or function of an historic asset based upon the strongest available evidence for its construction and layout. Even when restoring parts that have collapsed or been removed, what is produced will be new and will add another layer of history to the fabric. Restoration can be justified only when it does not diminish the value of the surviving fabric and leads to the enhancement and sustainability of that asset.

19 Restoration can easily compromise the authenticity of an historic asset. There is a fine line between restoration and new work. When restoration becomes speculative or produces a generalized recreation, the proposals should be treated as new work and judged against the criteria given in the section below.

20 It is particularly important to underpin restoration work by detailed, archaeological recording. The results produced will be integrated with and used to update the initial analysis of the evidence gathered to justify the restoration. When the work has been completed, copies of the results will be deposited in the National Monuments Record for Wales and in the regional Historic Environment Record held by the appropriate Welsh Archaeological Trust.

'The enhanced heritage value of the elements that would be restored decisively outweighs the value of those that would be lost.'

21 Any restoration project will inevitably remove or obscure part of the record of previous changes to that site. It will remove evidence of those changes and can potentially diminish its historical and aesthetic value. To outweigh those negative impacts, restoration must enhance

other heritage values to a greater extent. It may reveal and improve the understanding of an earlier or more important phase in the evolution of the site, highlighted in the Statement of Significance. It may greatly improve the setting and hence the enjoyment of the place. Finally, it may allow a past function to be restored, bringing new life to that site. Where significance of the historic assets is the result of centuries of change, their restoration to some earlier stage in their evolution is most unlikely to meet this criterion.

'The nature of the work proposed is justified by compelling evidence of the evolution of that site, and is executed in accordance with that evidence'.

22 Evidence of the evolution of the historic assets of that site, and particularly of the phase to which restoration is proposed, should be drawn from all available sources. This requires the study of the fabric itself (the primary record of its evolution), any documentation of the original design and construction process, and subsequent archival sources, including records of previous interventions. The results of this research and the reasoned conclusions drawn from it should be clearly set out.

'The form in which the asset currently exists is not the result of a historically significant event but rather due to progressive decay or mismanagement'.

23 If a building or structure was ruined or its character fundamentally changed as a consequence of an important historic event, its subsequent state will contribute to its significance: for example, monastic houses unroofed at the Dissolution, or castles slighted in the Civil War.

In the wake of such episodes, some sites were ruined, some cleared away completely, and others repaired and adapted for new purposes. An attempt to restore those exceptional historic assets that have survived as ruins, would conflict with their roles as strong visual and emotional reminders of important historic events. Ruins — real or contrived — can also play a major role in designed landscapes, define the character of places or be celebrated in art. Even so, their restoration or adaptive reuse may be justified if the alternative is loss or unacceptable decay.

24 The public response to dramatic contemporary events can lead to pressure to restore a damaged structure. This may be to act as a memorial or be linked to the social and economic regeneration of the community. Any decisions on the extent of restoration need to address the sustainability of the desired outcome.

25 By contrast, casual neglect and decay, abandonment, crude adaptation for transient uses, and similar circumstances, are not normally considered historically significant events. Proposals to restore the resultant damage to those parts of the buildings or other historic assets, even after a long interval, would not normally be refused.

'The work proposed respects previous forms of that historic asset, and is designed not to prejudice alternative solutions in the future'.

26 The more radical the restoration, the more likely it is to introduce an element of incongruity. This can apply to the site itself and its setting.

'The maintenance implications of the proposed restoration are considered to be sustainable'.

27 It is essential to consider the long-term implications of a proposed restoration for its viability and sustainability. If, for instance, an historic asset or part of it was modified primarily in order to reduce maintenance costs, restoration without considering the increased resources needed for maintenance is likely to be counterproductive. The reinstatement of elaborate parterres in historic gardens is an example.

New work and alteration

28 New work or alteration to an historic asset will normally only be acceptable if:

a. the need for the work is fully justified; and
b. there is sufficient information comprehensively to understand the impacts of the proposal on the significance of the asset; and
c. the proposal would not materially harm the values of that asset, which, where appropriate, would be reinforced or further revealed; and
d. the quality of design and execution must add value to the existing asset; and
e. the long-term consequences of the proposals can, from experience, be demonstrated to be benign, largely reversible or be designed not to prejudice alternative solutions in the future.

29 The public interest in conserving and sustaining heritage values is not in conflict with the building of new work. Innovative design and construction is important to sustaining cultural values, but should not be achieved at the expense of assets of established value. New work can also support the maintenance and enhancement of other historic assets through the regeneration of an area.

'The proposal would not materially harm the values of that asset, which, where appropriate, would be reinforced or further revealed'.

30 The greater the range and strength of heritage values attached to a site, the less opportunity there may be for change. However, few sites are so sensitive that they, or their settings, present no opportunities for the addition of new work.

'The quality of design and execution must add value to the existing asset'.

31 The need for quality in new work applies at every level, from small interventions in a historic room, to major new buildings or developments. Small changes need as much consideration as large ones, as cumulatively their effect can be comparable.

32 In justifying new work to an historic asset, there must be a clear and coherent understanding of the relationship of all the parts to the whole, as well as to the setting into which the new work is to be introduced.

33 Achieving quality always depends on the skill of the designer. The choice of appropriate materials and the craftsmanship applied to their use is particularly crucial to both durability and to maintaining the specific character of historic assets.

34 The assessment of the quality of design is subjective. It is a statutory requirement for applicants to submit Design and Access Statements with applications for planning permission and listed building consent. For large or particularly sensitive proposals, opinions may be sought from the Design Commission for Wales.

'The long-term consequences of the proposals can, from experience, be demonstrated to be benign, or the proposals are designed not to prejudice alternative solutions in the future'.

35 Where proposals for new work involve some intervention into the existing fabric of an historic asset, there will be a 'presumption in favour of preservation' (doing no harm). If new work is designed to be reversible then it will not prejudice alternative solutions in the future.

36 There are limits beyond which loss of the inherited fabric compromises the authenticity and integrity of an historic asset. At the extreme, a proposal to retain no more than the façade of a historic building attached to a modern structure must be considered

in the light of an assessment of the existing values of the building, both as a whole and in its elements. The relationship between the façade and the existing and proposed structures behind will be crucial to the decision, but retaining the façade alone will rarely be acceptable.

37 Following a risk assessment or the review of statutory duties, some changes may be proposed to lessen the risk or consequences of a disaster to an historic asset. These may result from the need for improved fire prevention or escape routes, flood defences or protection from attack. All options should be evaluated so that a balance can be struck between the possibility of major harm to heritage values without them, and the certainty of the lesser, but often material, harm caused by the works themselves. Works may also be required to improve physical access and provide a safer environment. These may cause some harm to the evidential, historical, and aesthetic values of the historic asset, but be more than balanced by increasing the communal values deriving from the sustained use of the asset.

38 As with repair, the use in new work of materials and techniques proven by experience to be compatible with existing fabric, including recycled material from an appropriate source, tends to bring a low risk of failure. Work which touches existing fabric lightly, or stands apart from it, brings a greater opportunity for innovation and reversibility.

Integrating conservation with other interests

39 Changes which would harm the heritage values of an historic asset will be unacceptable unless:

a. the changes are demonstrably necessary either to make that asset sustainable, or to meet an overriding public policy objective or need; and
b. there is no reasonably practicable alternative means of doing so without harm; and
c. that harm has been reduced to the minimum consistent with achieving the objective; and
d. it has been demonstrated that the predicted benefit decisively outweighs the harm to the values of the asset, considering
   - its comparative significance;
   - the impact on that significance; and
   - the benefits to the asset itself and/or the wider community or society as a whole.

40 Sustainability requires the integration of heritage and other environmental interests with economic and social objectives at every level of strategic planning. It is essential that those promoting the need for change consider and compare the impacts on the significance of the historic assets of a range of options to achieve their objectives. This should lead to the selection of an option that either eliminates, or (as far as is possible) mitigates harm. It will be Cadw's and other heritage professionals' role to put the case for the preservation of the historic assets fully and robustly.

41 The sustainable sourcing of materials, and environmental good practice should guide all new work, but not to the extent of causing harm to the heritage values of the asset.

42 The Welsh Assembly Government wishes to promote greater energy efficiency and the production of renewable energy (*TAN 8: Planning for Renewable Energy*). This can present particular challenges, for example, in the adaptation of historic buildings and the placing of generating equipment within historic landscapes. Cadw has issued guidance on this topic — *Renewable energy and your historic building. Installing micro-generation systems: A guide to best practice*. The inherent sustainability of historic buildings (over new build) also needs to be recognized. For example, the energy expended in producing a new building, regardless of how energy efficient it might be, means that it will take many years to compensate for the loss of any historic building it may replace.

'Comparative significance'.

43 The greater the significance of an historic asset to society, the greater the weight that should be attached to sustaining its heritage values.

44 Since statutory designation is a clear indicator of the significance of an historic asset, the fact of designation can itself play a vital role in guiding options for strategic change. The absence of designation, however, does not necessarily mean that an historic asset has a low significance. The weight to be attached to heritage values relative to other public interests should not be considered until those heritage values have been properly evaluated, assessed against current criteria and, if they meet them, safeguarded by designation.

'Impact on significance'.

45 The assessment of the degree of harm to an historic asset needs to consider the impact of any proposal on its heritage values, and the likely consequences of doing nothing. In the case of a derelict historic building, for example, should a viable, but modestly damaging, proposal

be refused in the hope that a better or less damaging scheme will come forward before the place reaches the point of no return? In such circumstances, the known or predicted rate of deterioration is a crucial factor, and hope must be founded on rational analysis. The fact that somewhere has been neglected should not, of itself, be grounds for agreeing to a scheme that would otherwise be unacceptable. The impact of the proposals being put forward need to be assessed by comparing the significance of the historic assets to be affected in their current condition and after the completion of the works. The potential availability of subsidy as an alternative to harmful change, or to limit its impact, should be considered.

'Benefits to the site'.

46 Quite minor changes, for example to meet the duties to make 'reasonable adjustments' under disability or fire safety legislation, or accommodate changing liturgy in a church, may keep a site fit for use. This in turn can make it sustainable by maintaining its market value, or allowing its continued use by a community. Changes that cause harm to the heritage values of the site should be limited to what is necessary to sustain it in use. Their impacts can be mitigated by good design.

'Benefits to the wider community or society as a whole'.

47 When considering the severity of potential impacts upon an historic asset, there should always be proportionality and reasonableness. The balance lies between the irreplaceable loss of something of historic value and the predicted benefits of the development. Each party involved will make value judgements, and choose to attach different weights to particular values. If such positions cannot be reconciled, it may lead to a public inquiry, and ultimately a political decision.

48 Heritage regeneration through the reuse or development of historic buildings or other historic assets can ensure the sustainability of a local community. The potential benefits of such regeneration proposals need to be tested against the conservation principles.

Enabling development

49 Enabling development that would secure the future of an important historic asset, but contravene other planning policy objectives, will be unacceptable unless:

a. it will not materially harm the heritage values of the historic asset or its setting; and
b. it avoids detrimental fragmentation of management of the historic asset; and

c. it will secure the long-term future of the historic asset and, where applicable, its continued use for a sympathetic purpose; and
d. it is necessary to resolve problems arising from the inherent needs of the historic asset, rather than the circumstances of the present owner, or the purchase price paid; and
e. sufficient subsidy is not available from any other source; and
f. it is demonstrated that the amount of enabling development is the minimum necessary to secure the future of the historic asset, and that its form minimizes harm to other public interests; and
g. the public benefit of securing the future of the historic asset through such enabling development decisively outweighs the disbenefits of breaching other public policies.

50 Enabling development is development that would deliver substantial heritage benefits, but which would be contrary to other objectives of national, regional or local planning policy. It is an established planning principle that such development may be appropriate if the public benefit of rescuing, enhancing, or even endowing an important historic asset decisively outweighs the harm to other material interests. Enabling development must always be in proportion to the public benefit it offers.

51 If it is decided by a local authority that a scheme of enabling development meets all the criteria set out above, planning permission should be granted only if:
a. the impact of the development is precisely defined at the outset, normally through the granting of full, rather than outline, planning permission;
b. the achievement of the heritage objective is securely and enforceably linked to the enabling development;
c. the place concerned is repaired to an agreed standard, or the funds to do so made available, as early as possible in the course of the enabling development, ideally at the outset and certainly before completion or occupation; and
d. the planning authority closely monitors implementation, if necessary acting promptly to ensure that obligations are fulfilled.

52 By including this section, Cadw is endorsing English Heritage's *Enabling Development and the Conservation of Significant Places* (September 2008).



Definitions

This section includes words used in a specific or technical sense.

Alteration
Work intended to change the function or appearance of an historic asset.

Authenticity
Those characteristics that most truthfully reflect and embody the cultural heritage values of an historic asset.

Conservation
The process of managing change to an historic asset in its setting in ways that will best sustain its heritage values, while recognizing opportunities to reveal or reinforce those values for present and future generations.

Conservation area
'An area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance', designated under what is now s69 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Conservation Plan
A document, which sets out the significance of a site, and how that significance will be retained in any future use, alteration, repair, management or development.

Dinas Dinlle hill fort, Gwynedd, is being actively managed. However, its clifftop edge is suffering from coastal erosion, leading to the loss of vital archaeological evidence (© Crown Copyright: RCAHMW).

Designation
The recognition of particular heritage value(s) of an historic asset by giving it formal status under law or policy intended to sustain those values.

Design and Access Statement
Document to accompany all planning and listed building consent applications whose contents are set out in *TAN 12: Design*, appendix 1.

Fabric
The material substances which make up an historic asset, including the upstanding physical remains and the buried archaeological deposits.

Harm
Change for the worse, here primarily referring to the effect of inappropriate interventions on the heritage values of an historic asset.

Heritage
All inherited resources which people value for reasons beyond mere utility.

Heritage, cultural
Inherited assets which people identify and value as a reflection and expression of their evolving knowledge, beliefs and traditions, and of their understanding of the beliefs and traditions of others.

Heritage, natural
Inherited habitats, species, ecosystems, geology and landforms, including those in and under water, to which people attach value.

Historic asset
An identifiable component of the historic environment. It may consist or be a combination of an archaeological site, an historic building, or a parcel of historic landscape. Nationally important historic assets will normally be designated.

Historic environment
All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed.

Historic Environment Record
A public, map-based data set, primarily intended to inform the management of the historic environment. In Wales these are maintained by the four Welsh Archaeological Trusts.

Integrity
Wholeness, honesty.

Intervention
Any action which has a physical effect on the fabric of an historic asset.

Maintenance
Routine work regularly necessary to keep the historic fabric in good order.

Material
Relevant to and having a substantial effect on, demanding consideration.

Natural change
Change which takes place in the historic environment without human intervention, which may require specific management responses (particularly maintenance or periodic renewal) in order to sustain the significance of a place.

Object
Anything not (now) fixed to or incorporated within the historic environment, but associated with it.

Preserve
To keep safe from harm.

Proportionality
The quality of being appropriately related to something else in size, degree, or other measurable characteristics.

Public
Of, concerning, done, acting, etc. for people as a whole.

Renewal
Comprehensive dismantling and replacement of an element of an historic asset, in the case of structures normally reincorporating sound units.

Repair
Work beyond the scope of maintenance, to remedy defects caused by decay, damage or use, including minor adaptation to achieve a sustainable outcome, but not involving restoration or alteration.

Restoration
To return an historic asset to a known earlier state, on the basis of compelling evidence, without conjecture.

Reversible
Capable of being reversed so that the previous state is restored.

Setting
The surroundings in which an historic asset is experienced, its local context, embracing present and past relationships to the adjacent landscape.

Significance [within the historic environment]
The sum of the cultural heritage values, often set out in a Statement of Significance.

Site
The place where an historic asset is located.

Sustain
Maintain, nurture and affirm validity.

Sustainable
Capable of meeting present needs without compromising ability to meet future needs.

Transparent
Open to public scrutiny.

Value
An aspect of worth or importance, here given by people to historic assets.

Value, aesthetic
Value deriving from the ways in which people draw sensory and intellectual stimulation from a place.

Value, communal
Value deriving from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

Value, evidential
Value deriving from the potential of a place to yield evidence about past human activity.

Value, historical
Value deriving from the ways in which past people, events and aspects of life can be connected through a place to the present.

Values, heritage
The sum of the four component values (evidential, historical, aesthetic and communal).

Value-based judgement
An assessment that reflects the values of the person or group making the judgement.

1. *Conservation at Tintern Abbey, Monmouthshire.*
2. *Dinefwr Castle, Carmarthenshire.*
3. *The Earl's Chamber at Chepstow Castle, Monmouthshire.*
4. *Conservation at Plas Mawr, Conwy.*
5. *St Davids Bishop's Palace, Pembrokeshire.*
6. *Capel Jerusalem, Bethesda, Gwynedd (© Crown Copyright: RCAHMW).*
7. *Ancient farming landscape, Skomer Island, Pembrokeshire (© Crown Copyright: RCAHMW).*
8. *New footbridge at Caernarfon Castle, Gwynedd.*
9. *Excavation of the Priory Field at Caerleon, Newport.*
10. *10–12 Dunraven Place, Bridgend.*
11. *Industrial landscape of Blaenau Ffestiniog, Gwynedd (© Crown Copyright: RCAHMW).*
12. *Aberaeron, Ceredigion (© Crown Copyright (2009) Visit Wales).*
13. *Troed-Rhiw-Fallen, Cribyn, Ceredigion (© Greg Stevenson).*
14. *Conservator at Cilwendeg Shell House, Pembrokeshire.*
15. *Castell Aberlleiniog, Anglesey (© Heritage Lottery Fund).*































Cadw is the Welsh Assembly Government's historic environment service, working for an accessible and well-protected historic environment for Wales.

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APPENDIX K

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Definitions below are from Ward Bucher's *Dictionary of Building Preservation* (published John Wiley & Sons, Inc., New York, 1996) except where noted.

Bank barn- A barn built into a slope, or with a bank of earth against one side, so that the main floor is at grade on one side and one story above grade on the other side.

Brick veneer- A single wythe of face brick forming the exterior wall finish and supported horizontally by an independent building frame.

Chaska brick- A brick of a characteristic light tan-yellow color made in the city of Chaska, in Carver County, Minnesota (definition by author).

Chinking- The material used to fill a chink, especially between the logs of a log house; often consists of clay mixed with other materials including sand, lime, stones, and hair; generally referred to the material between the logs that is then covered with daubing; types include stones, pieces of wood, moss, and newspapers.

Collar tie- A horizontal member that connects a pair of rafters above their base to form an A-shape; typically used to prevent sagging caused by the weight of the roof without diagonal truss members.

Cupola- A small structure projecting above a roof that provides ventilation or is used as a lookout.

Daubing- The rough mortar, clay, or plaster smeared on a surface; used for chinking in a log cabin.

Double-hung window- A window with two sashes that slide past each other vertically; either both sashes are hung with cord, pulley, and counterweight on each side, or the bottom sash has cords and counterweights on each side.

Dovetail- A tenon, especially of wood, cut in a flared shape similar to a bird's tail; typically used to make a dovetail joint or to connect the end of one timber frame element to another element. A dovetail notch system is used for a log house in which the end of the log is wider at the outside of the dovetail-shaped notch.

Façade- Any of the exterior faces of a building.

Fascia board- The board that forms a horizontal band at the edge of an eave.

Gable roof- A pitched roof with two inclined planes having equal angles that meet at a peak in the center and terminate at a vertical gable. A gable is a triangular shape or peak at the top of a wall (addition by author).

Half-buck- A reinforcing piece of wood that is added to a barn door on a diagonal (by author).

Header course- A brick bond course composed of continuous headers.

Hewn- Material roughly cut or shaped with hand tools from basic materials, such as logs or rocks.

Hip roof- A roof that slopes inward from all exterior walls; forms a pyramid roof above a square plan; has a ridge shorter than the length of the building above a rectangular plan.

Jamb- The facing sides of a wall opening, such as a door or window.

Linseed oil- An oil made from ground flaxseed; types include bleached, raw, refined, and pale boiled oil; used in… oil-base paint, varnish, and other building materials; typically produces a hard, glossy finish.

Period of Significance- The span of time when a property attained its significance (definition adds: that meets the National Register criteria).

Preservation- "The act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing form and vegetative cover of a site" (Secretary of the Interior's Standards for Rehabilitation).

Rafter- One of a series of parallel, sloped, roof beams that support the sheathing or roof covering.

Reconstruction- The process of duplication the original materials, form, and appearance of a vanished building or structure at a particular historical moment based on historical research.

Rehabilitation- To repair an existing building to good condition with minimal changes to the building fabric; may include adaptive use, restoration.

Repointing- Repairing existing masonry joints by removing defective mortar and installing new mortar. Repointing is done as part of normal maintenance of a masonry building (sentence added by author).

Restoration- The process or product of returning, as nearly as possible an existing site, building, structure, or object to its condition at a particular time in its history, using the same construction materials and methods as the original where possible.

Running bond- A masonry bond with continuous courses of stretchers with each head joint centered in the stretcher above and below. A head joint is the vertical masonry joint between two adjacent masonry units.

Shakes- A split, rather than sawn, wood shingle; common on log cabins and farm buildings.

Sheathing- Material used to enclose and strengthen the walls and/or roof of a (wood-frame) building.

Shed roof- A roof with a single slope, with the rafters spanning from one outside wall to the opposite wall. Also known as a lean-to, pent roof.

Shingles- Thin overlapping elements for roofing or siding. They are smoother than shakes, because they are not cut by hand (sentence added by author).

Shiplap- An overlapping, flush joint at the long edges of two boards; typically formed by a continuous, rectangular notch on opposite sides of both edges of each board; used to make a weathertight joint for siding.

Sill- 1. The horizontal piece of lumber, or built-up section, that rests on the foundation and forms the base of a wood frame wall. 2. The projecting horizontal base of a window or door; may be of any material; types include sill stone, slip sill.

Threshold- The saddle of an exterior [or interior] door, or a similar element that separates the floor finishes on either side of an exterior [or interior] door.

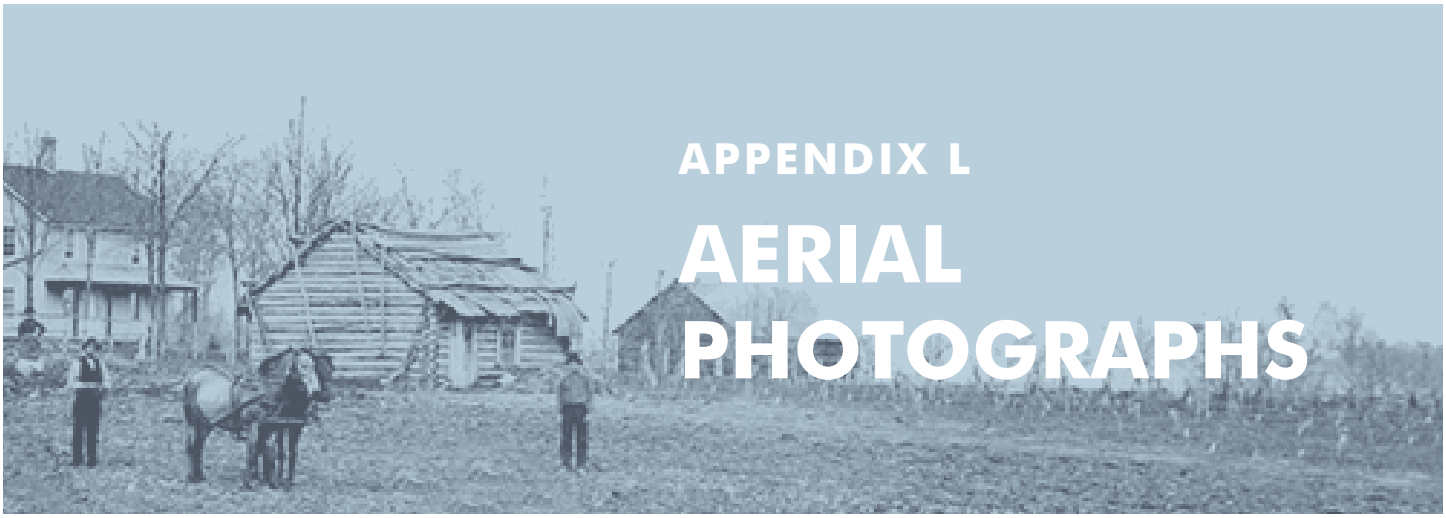
Timber framing- A wood frame system with heavy corner posts, intermediate posts, girts, and summers supporting floor joists and rafters; the joists may be mortised to the girts or rest on top; the most common type of North American house framing ca. 1600-ca. 1800; typically used for barns and mills through the 19c, later in rural areas.

Tongue-and-groove- A wood joint where the projecting tongue on the edge of one board fits into the recessed groove on the edge of the adjoining board.

Unconditioned spaces- Spaces without HVAC systems or other ways of controlling air temperature and thermal comfort.

Whitewash- A surface coating applied as a creamy paste composed of slaked lime and water, sometimes other ingredients such as salt, sugar, or whiting; most commonly used as an interior wall and ceiling finish before 19c, then commonly used on exterior wood, masonry, and concrete, or interior surfaces below grade; sometimes tinted with bluing, indigo, Indian red, lampblack, raw umber, or yellow ocher; varieties include yeso. Also known as white lime.

Wythe- A single layer of wall thickness of masonry material; typically the depth of a brick stretcher (longest dimension horizontal and its shortest dimension vertical at the face of the wall); generally used to indicate the number of brick thicknesses of a solid wall, or one part of a cavity wall.



APPENDIX L

AERIAL PHOTOGRAPHS

AERIAL PHOTOGRAPHS
OF THE ANDREW PETERSON FARMSTEAD

The following are aerial photographs from the "Minnesota Historical Aerial Photographs Online," https://www.lib.umn.edu/apps/mhapo/. Photographs are dated and listed chronologically.



August 19, 1937



September 3, 1940



1945



July 22, 1951



May 10, 1957



May 8, 1960



Circa 1950s
Image courtesy of the Carver County Historical Society.



APPENDIX M

LIST OF FIGURES

FIGURE	CAPTION	DATE TAKEN	FIGURE CREDIT	PAGE #
Cover Page	South façade of South Barn, photograph taken August 2015.	August, 2015	MacDonald and Mack Architects	Cover Page
Recurring Section Header	1885 photograph of the Andrew Peterson Farmstead, camera facing northeast.	1885	Carver County Historical Society	Recurring Header
1	Andrew Peterson in his apple orchard, 1896, photo courtesy of the Minnesota Historical Society.	1896	Minnesota Historical Society	p. 11
2	Peterson family in front of Farmhouse (1), photograph taken May 8, 1885.	May 8, 1885	Carver County Historical Society	p. 13
3	Farmhouse (7), camera facing northwest.	2017	MacDonald and Mack Architects	p. 13
4	The east façade of the Granary (8).	December, 2016	MacDonald and Mack Architects	p. 13
5	Photograph of the South Barn (3), camera facing northeast.	December, 2016	MacDonald and Mack Architects	p. 13
6	North façade of the North Barn (4).	December, 2016	MacDonald and Mack Architects	p. 14
7	West façade of the Smokehouse (5).	December, 2016	MacDonald and Mack Architects	p. 14
8	North façade of 1914 Big Barn and Silo (6).	December, 2016	MacDonald and Mack Architects	p. 15
9	East façade of Garage (7).	2017	MacDonald and Mack Architects	p. 15
10	Plat book of Carver County, depicting the Andrew Peterson Farm (center), published by the Northwest Publishing Company, 1898. Minnesota Historical Society.	1898	Minnesota Historical Society	p. 23
11	The Peterson family, left to right, Andrew, Elsa, Oscar, Anna Isabelle, Josephine, Ida, Emma, George (Sture), John (Axel), Charles (Carl), and Frank.May 8, 1885. Photo Carver County Historical Society.	May 8, 1885	Carver County Historical Society	p. 28
12	Photograph taken on May 4, 1885. Photo Carver County Historical Society.	May 4, 1885	Carver County Historical Society	p. 33
13	Photograph taken on May 4, 1885. Photo Carver County Historical Society.	May 4, 1885	Carver County Historical Society	p. 34
14	Undated photograph, ca. 1910s, perhaps picturing (left to right) Frank, Elsa, Oscar, Emma, and Axel Peterson. Photo Carver County Historical Society.	Circa 1910s	Carver County Historical Society	p. 36
15	Envelope from an 1893 letter to Andrew Peterson from C. G. Patten of the Charles City Nurseries, Charles City, Iowa. Peterson and family papers, Minnesota Historical Society.	1893	Minnesota Historical Society	p. 37
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18	Diary entries from 1884. Andrew Peterson and family papers, Minnesota Historical Society.	1884	Minnesota Historical Society	p. 43
19	Image from Laser Scan performed in 2017 showing aerial view of 1914 Barn, South Barn, Garage, and Farmhouse.	2017	Crane Engineering	p. 51
20	Image from Laser Scan performed in 2017 showing aerial view of 1914 Barn and Silo, the Granary, and the South Barn.	2017	Crane Engineering	p. 53
21	Image from Laser Scan performed in 2017 showing the Farmhouse, sheds on the neighboring property, the 1914 Barn and Silo, and the South Barn. View facing northeast.	2017	Crane Engineering	p. 55
22	Image from Laser Scan performed in 2017 showing the Farmhouse. View facing north.	2017	Crane Engineering	p. 56
23	Image from Laser Scan performed in 2017 showing aerial view of property. Highway 5 and Parley Lake Road are visible.	2017	Crane Engineering	p. 57
24	Early log residence, May 4, 1885.	May 4, 1885	Carver County Historical Society	p. 63
25	Early log residence, May 4, 1885.	May 4, 1885	Carver County Historical Society	p. 66
26	Typical wood construction details, a: round-timber with a saddle notch, b: pentagonal timber, c: hexagonal timber, d: square-hewn logs with a more "sophisticated" joining technique, e: dovetail construction. From *Building Traditions Among Swedish Settlers in Rural Minnesota* by Lena A:son-Palmqvist, 1983.	1983	*Building Traditions Among Swedish Settlers in Rural Minnesota* by Lena A:son-Palmqvist, 1983.	p. 69
27	1885 photograph cropped to show fences.	1885	Carver County Historical Society	p. 71
28	1885 photograph cropped to show fences.	1885	Carver County Historical Society	p. 72
29	Drawing of a Stake and Rider fence from the book, Old-Time Gates and Fences and How to Build Them edited by George Martin.	Dover edition 2013, original published in 1887.	*Old-Time Gates and Fences and How to Build Them* edited by George Martin.	p. 73

30	Line drawing of a split rail fence, image source: http://themantelguy.blogspot.com/2009/06/splitrail-fence-drawing.html	2009	http://themantelguy.blogspot.com/2009/06/splitrail-fence-drawing.html	p. 73
31	Aerial view taken August 19, 1937, courtesy of Borchert Map Library, http://geo.lib.umn.edu/Carver/y1937/WM-19-1719.jpg.	August 19, 1937	Borchert Map Library	p. 77
32	Image of driveway looking east towards 1914 barn, taken in 1969. The workshop is to the left of the image.	1969	Carver County Historical Society	p. 78
33	2017 image of main driveway looking south towards Island View Road.	2017	MacDonald and Mack Architects	p. 79
34	2017 image of driveway to House/Garage looking east towards 1914 barn.	2017	MacDonald and Mack Architects	p. 79
35	1885 photograph cropped to location of Apple Orchard.	1885	Carver County Historical Society	p. 87
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APPENDIX N

BIBLIOGRAPHY

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Archive Collections

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Andrew Peterson's diary, perhaps the single most important piece of documentation available about the farmstead, is included in this collection. In it, Peterson recorded his daily activities on the farm. It is a window into the Peterson family's lifestyle, and a record of the physical work and changes made to the farm during his lifetime. The original diary is written in Swedish, and English translations are available from the Carver County Historical Society in Waconia, Minnesota. The Cash Account Books are also included in the Andrew Peterson and Family Papers. They are written records of the Peterson family's income and the money they spent each year.

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